April 1953 Volume 68 Number 4

PUBLIC HEALTH REPORTS

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Epidemiology and Diarrheal Disease
Evaluation of Child Health Services
Study of Health Activities
Annual Technicists Conference
Health in Indonesia

U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service

Maternal and child health

. . . challenges and goals, 1953

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PUBLIC HEALTH REPORTS

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The Challenge of the First Week of Life

IN LESS than four decades America has witnessed a reduction of more than two-thirds in its infant death rate. This saving in lives of infants has been achieved chiefly through the control of diarrhea and enteritis, and of pneumonia and influenza. The greatest saving has been in babies 1 week to 1 year of age.

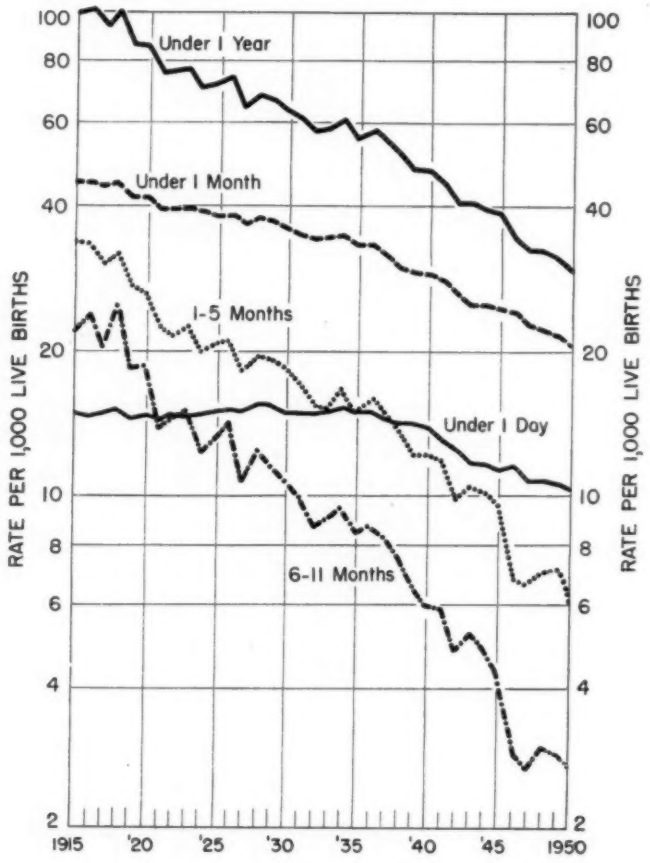
Today mortality in the first week of life presents a primary challenge. In 1950, the infant death rate for the first week was 17.8 per 1,000 live births. Immaturity was reported as contributing to the deaths of 42,988 infants in 1950. The death rate per 1,000 live births in that year totaled 29.2. The rate for deaths associated with immaturity was 12.1. Immaturity as the sole factor in death was recorded for 22,413 infants.

To reduce this toll requires more good obstetrical care, special hospital facilities, and pediatricians and nurses with training in the care of premature babies.

When an infant is born prematurely and has to be separated from its mother, it is difficult to achieve the intimate relationship which ordinarily develops between mother and baby as she cares for it during the early weeks of life. When the mother begins to take care of her baby she may need help not only on how to feed and clothe the infant, but also in attaining a sense of security for herself and her baby.

Premature birth, however, is but one of the challenges to maternal and child health in 1953. For a discussion of both challenges and goals, see page 397.

Infant mortality rates by age, birth-registration States, 1915–50



frontispiece A nurse trained in the care of the premature infant is shown feeding an infant by means of a stomach tube in this Virginia State Department of Health photograph.

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Effect of Fly Control on Diarrheal Disease In an Area of Moderate Morbidity

By DALE R. LINDSAY, Ph.D., WILLIAM H. STEWART, M.D., and JAMES WATT, M.D., Dr.P.H.

IN AN EARLIER study in Hidalgo County, Tex., flies were shown to be vectors of *Shigella* infections in an area of high diarrheal disease morbidity and mortality rates (*1*). The high rates and other features peculiar to that area were recognized as factors which might limit the applicability of this method of reducing such enteric infections in the more frequently encountered areas of low to moderate morbidity and negligible mortality. This paper presents the results of a study, very similar to the Texas study, made in such an area of low to moderate morbidity from diarrheal disease. The area selected is in southern Georgia. Its small communities are characteristic of the rural South in size, climate, and agricultural practices favorable to fly breeding and in community sanitation that allows flies ready access to human excrement.

Plan of Study

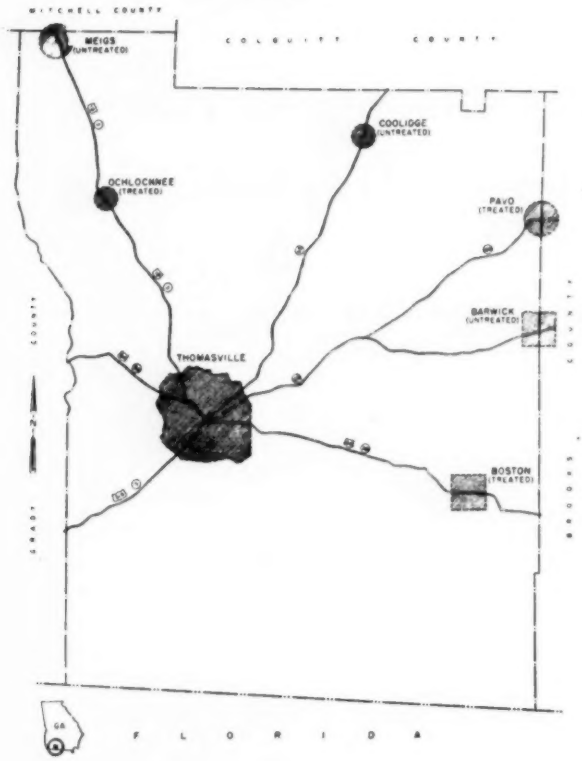
Fly control investigations were begun in Thomas County, Ga., in 1949. Of the six rural towns used in the study, Boston, Pavo, and Ochlochnee were selected for chemical treatment. Barwick, Coolidge, and Meigs, located between the treatment towns, were selected as untreated checks in an effort to equalize differences due to geographic location or agricultural practices (fig. 1).

Fly populations in the two groups of towns were measured by the Scudder fly grill method (*2*), and a minimum of the five highest grill counts per sample block was recorded. In the treated towns, all blocks were sampled weekly, to pinpoint areas in need of re-treatment. In untreated towns, representative blocks constituting only 10 to 20 percent of the total number of blocks were similarly sampled. The validity of this economy in sampling was established by comparable figures obtained when indexes of similar 10- to 20-percent samples, chosen by lot from the total samples of treated towns, were matched against the indexes of the total samples, as well as by supporting studies (*3*).

A town was re-treated when the average of the five high grill counts of flies exceeded three flies in any block. This lower re-treatment index, as compared with that used in the Texas study (*1*), was arbitrarily used in order to compensate for obvious differences in the two study areas. Blocks in the Georgia towns were much larger than those in the Texas towns, and numbers of fly attractants per block were higher. Thus larger populations of flies per index unit were represented. Comparison of the third high count averages in the Texas and Georgia areas indicated that the overall degree of fly

Dr. Lindsay is chief of the Thomasville Field Station of the Communicable Disease Center, Public Health Service, and Dr. Stewart is chief of the epidemiology unit of the station. Dr. Watt, formerly with the National Microbiological Institute, is now director of the National Heart Institute of the National Institutes of Health, Public Health Service. *This paper is a third in a series of diarrheal disease control studies.*

Figure 1. Location of study towns in Thomas County, Ga.



control achieved was comparable in the two areas. The third high count was used as an index, rather than the single high count, because it minimized vagaries due to single high concentrations of flies which sometimes were found.

Fly control in the treated towns was first accomplished by application of 5-percent DDT emulsion, using both space and residual spray methods. After 10 months of treatment, the high degree of DDT resistance which developed in the housefly (*Musca domestica* L.) population precluded further effective control with DDT. Dieldrin was therefore substituted in Pavo and in Boston. It was applied as a residual spray emulsion at rates of 50 mg. and 25 mg. of dieldrin per square foot of spray surface, respectively. Chlordan was substituted in Ochlochnee and was used as a residual spray emulsion applied at the rate of 100 mg. of chlordan per square foot of spray surface.

The effect of fly control on the prevalence rate of infection with *Shigella* and *Salmonella* organisms and on the rate of diarrheal disease was measured by comparing the rates found in comparable population samples in the treated and untreated towns before, during, and after fly control. These rates were established by obtaining monthly rectal swab cultures from all children under 10 years of age in the samples, and monthly histories of diarrheal disease occurring in their families. Mortality rates from diarrheal disease were not used as a measure of the effect of fly control, because there were too few deaths for significant comparison.

The populations studied within the towns were in those neighborhoods having the highest proportion of children under 10 years of age. A disproportionate number of this age group was included since it has the greatest incidence of infection and disease due to *Shigella* organisms. The population figures for 1950 in the treated and untreated towns and in the samples selected in these groups of towns are given in table 1. The total populations of treated towns and untreated towns were approximately equal. The sample population included slightly less than one-half of the total population in each group of towns.

Results of Fly Control

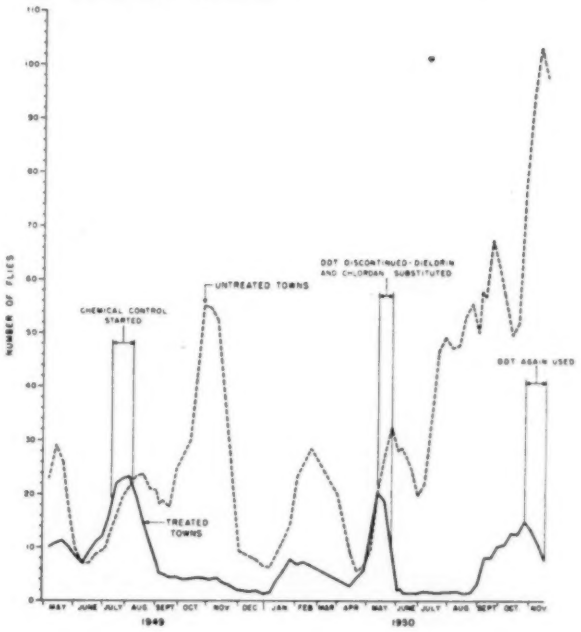
Effects of the chemical control operations upon all common species of flies, considered as a group, are shown in figure 2. A 3-week moving average of the median or third high grill counts for all survey blocks is used as an index of the fly populations observed in the two groups of towns. Weekly fly counts were made for approximately 3 months before control op-

Table 1. Population for 1950 in the treated and untreated towns and in the samples selected in these groups of towns

Towns	Total population of towns [1]	Total population of sample [2]	Children under 10 years of age in sample [2]
Treated	2, 344	983	239
Untreated	2, 325	1, 007	260

[1] Preliminary report 1950 census, U. S. Bureau of Census.
[2] Census taken in study.

Figure 2. Effect of chemical control operations on all species of flies (3-week moving average of third high fly count).

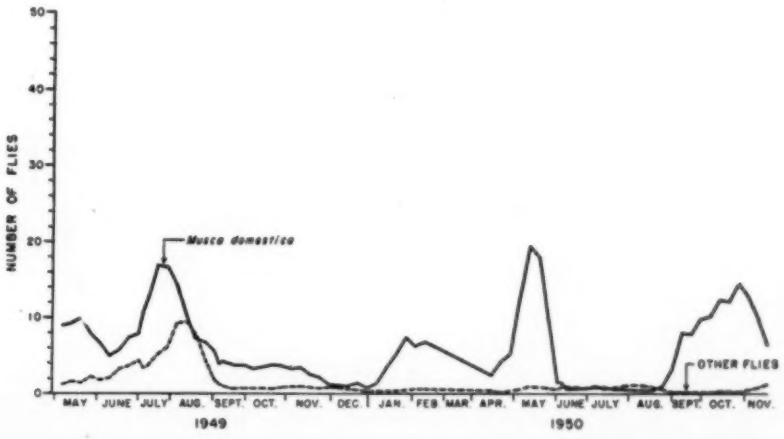

NUMBER OF FLIES
CHEMICAL CONTROL STARTED
UNTREATED TOWNS
DDT DISCONTINUED-DIELDRIN AND CHLORDAN SUBSTITUTED
DDT AGAIN USED
TREATED TOWNS
MAY JUNE JULY AUG SEPT OCT NOV DEC JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV
1949
1950

erations were begun, and, except for the first 3 weeks, index trends for both groups were very close. Control operations for 1949 began on July 18 in Pavo, on August 1 in Ochlochnee, and on August 10 in Boston. The intervals between these dates were taken up with the original treatment of the new town and retreatment, as needed, in the town or towns previously treated. The fly population index of the treated group declined as each of the towns came under operational control. Normal seasonal increases in the fly population in the untreated towns continued into November 1949, when cool weather curbed fly activity and breeding.

Warming weather in January and February 1950 resulted in rising population indexes in both groups of towns during January and forced intensification of operational control in the treated towns during February. The results of this control intensification can be seen clearly in comparing index lines for February in figure 2. Cool weather in March and early April held both fly breeding and activity in check and did not permit the taking of reliable population indexes through March. During the first 2 weeks of May the indexes for both groups rose sharply in spite of heavy reapplications of DDT in the treated towns.

Concurrent field observations and laboratory tests showed that houseflies (*M. domestica*) had become highly resistant to DDT, and with the rising mean temperature the ineffectiveness of DDT increased in accordance with principles established by Lindquist and associates (*4*, *5*). This trend toward housefly resistance to DDT was established by laboratory tests of wild flies taken from the treated towns before it was reflected by increased grill counts in the field. As a result of these laboratory tests, conducted according to a standardized procedure reported by Lindsay and Haines (*6*), substitute insecticides for DDT were on hand when needed. These insecticides, dieldrin and chlordan, were applied as described in the plan of study between the dates of May 16–26. Good control was maintained in the treated towns until late August 1950, compared with an increased fly

Figure 3. Number of *Musca domestica* compared with other flies in treated towns of Ochlochnee, Pavo, and Boston, Ga. (3-week moving average of third high fly count).


NUMBER OF FLIES
Musca domestica
OTHER FLIES
MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC. JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV.
1949
1950

population index for the untreated towns during July and August.

Throughout June and July 1950, the degree of fly control achieved by using dieldrin and chlordan was so nearly perfect that it was difficult to find individual flies, and concentrations of two or more flies were only rarely encountered. In late August, scarcely 12 weeks after the initial application of dieldrin and chlordan, it became evident from laboratory tests that housefly populations had gained immunity to these insecticides, as well as to DDT. Large populations were not found, as evidenced by the low fly index for the treated towns throughout August, but laboratory tests on small representative collections of these populations revealed a high degree of resistance to dieldrin and chlordan. These tests showed that dieldrin and chlordan selected houseflies with the same resistance factors. Chlordan resistance was found where only dieldrin had been used and dieldrin resistance where only chlordan had been used. After a high degree of dieldrin or chlordan resistance had been attained in field populations of houseflies, no dead or dying flies could be found as a result of the reapplications of these insecticides, and laboratory tests of wild flies showed no appreciable differences in the mortality of flies subjected to heavy residuals of dieldrin and of flies in the untreated checks.

Although DDT used against resistant houseflies would not produce satisfactory fly control, both dead and dying flies were easily found in the field following reapplication of DDT during October and November 1950, and the mortality of wild flies in laboratory tests against DDT residuals was significantly higher than in the untreated checks. Fly control by various field combinations of insecticides and of application methods was then attempted, and the decline shown in the treated towns' index during November was due mainly to reapplication of DDT sprays, probably enhanced by cool weather (*4, 5*).

As previously found in the Texas study, all marked failures in fly control operations were due to inability to control the common housefly. This fact is illustrated in figures 3 and 4, presented on scales identical to those in figure 2. The major role played by the housefly in developing resistance to insecticides is quite apparent in figure 3. It was the only species that increased significantly during the use of the insecticides.

In the three untreated towns all index points above 10 for species other than the housefly were due to seasonal increases in the single subtropical species *Sarcophagula occidua* Fabr. of the family Sarcophagidae (fig. 4). This species breeds abundantly in animal excrement and reaches its peak of breeding in late fall. An abundance of favorable media in the rural towns under study permitted large-scale breeding.

When considered in terms of habits and control difficulties, houseflies appear to be the primary species concerned as *Shigella* vectors. Results of ecological studies by Haines (*7*) of the

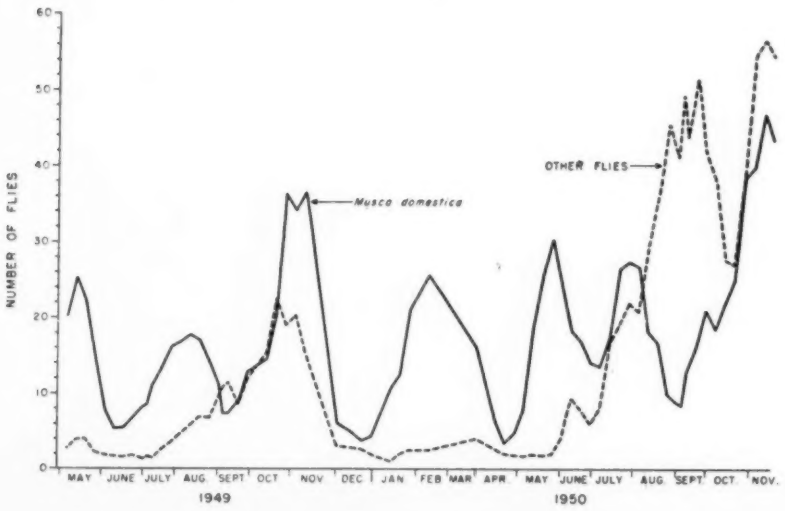


Figure 4. Number of *Musca domestica* compared with other flies in untreated towns of Meigs, Coolidge, and Barwick, Ga. (3-week moving average of third high fly count).

commonly occurring flies showed that houseflies were highly adaptable in using a wide variety of naturally occurring refuse as breeding media. Refuse was classified by source and nature into approximately 20 categories, and investigation revealed that houseflies bred in all categories, sometimes in numbers far smaller than the species most favored, but nevertheless in significant quantities. Since by qualitative standards the types of media most favorable to housefly breeding, such as animal excrement and bedding in stables, were also highest in frequency of occurrence and in volume in the study area, the greater relative abundance of houseflies at all seasons, as compared to that of other species, is to be expected.

Diarrheal Disease

Data on the prevalence of *Shigella* infections in children under 10 years of age in treated and untreated towns are grouped in two ways: by quarters of years and by periods covered before, during, and after fly control (table 2). At the beginning of the study, prevalence rates in the two groups of towns approximated one another. With the beginning of fly control operations in July 1949, the prevalence rate in the treated towns fell, and remained low, whereas the rate in the untreated towns continued high. This relationship remained during the period of good fly control from September 1949 to late August 1950. When effective fly control was lost, after August 1950, the percentage of

Table 2. Prevalence of *Shigella* infections in children under 10 years of age in the treated and untreated towns, April 1949 to December 1951

Period: Month culture done	Treated			Untreated			Probability "P"
	Number of cultures	Number positive	Percent positive	Number of cultures	Number positive	Percent positive	
Before fly control:							
April	220	8	3.6	398	20	5.0	0.26
May							
June	478	14	2.9	623	23	3.7	
August							
Total	698	22	3.2	1,021	43	4.2	
During fly control:							
September	417	6	1.4	595	15	2.5	.0001
November							
December	451	2	.4	609	20	3.3	
February							
March	437	2	.5	681	11	1.6	
May							
June	487	4	.8	679	14	2.1	
August							
Total	1,792	14	.8	2,564	60	2.3	
After fly control:							
September	379	17	4.5	565	25	4.4	.06
November							
December	271	9	3.3	346	7	2.0	
February							
March	393	10	2.5	506	6	1.2	
May							
June	366	15	4.1	449	11	2.4	
August							
September	294	14	4.8	226	9	4.0	
November							
December	84	2	2.4	77	1	1.3	
Total	1,787	67	3.7	2,169	59	2.7	
Grand total	4,277	103	2.4	5,754	162	2.8	

Shigella infections in treated towns rose until, in October 1950, it exceeded the rate in untreated towns. For the next 12 months, rates in the treated and untreated towns remained on a level similar to that before fly control started. The percentage of *Shigella* infections before, during, and after fly control is shown in figure 5.

The number of isolations of *Salmonella* organisms during this study was quite small. However, there were just as many isolations made in treated towns as in untreated towns during effective fly control. This lends weight to the previous report (*1*) that fly control did not influence the spread of these organisms in the same way that it did the *Shigella* group.

The crude and standardized attack rates per 1,000 a year for reported diarrhea in children under 10 years of age were almost identical in the treated and untreated towns for the 8 months before fly control operations began (table 3). During the year fly control was maintained, the rate of reported diarrheal disease was appreciably lower in the treated towns, but showed little change in the untreated towns. After fly control was lost, the rate of diarrheal disease in treated towns rose to slightly below that in untreated towns. The significant change in the attack rate of diarrheal disease in treated towns during the fly control period is shown in figure 6.

Reversal of the treated and untreated towns in order to duplicate the effect of fly control on diarrheal disease was impracticable because of the relatively high insecticidal resistance in the previously untreated towns. This resistance, detected by laboratory tests, could have resulted from widespread individual use of household and agricultural chemical insecticides.

Figure 5. Prevalence of *Shigella* infections in children under 10 years of age before, during, and after fly control.

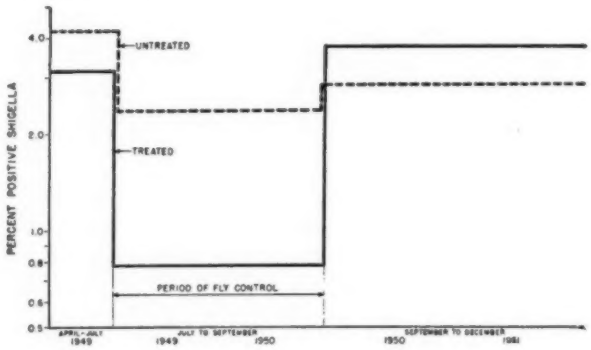


Figure 6. Standardized attack rates for diarrhea in children under 10 years of age before, during, and after fly control.

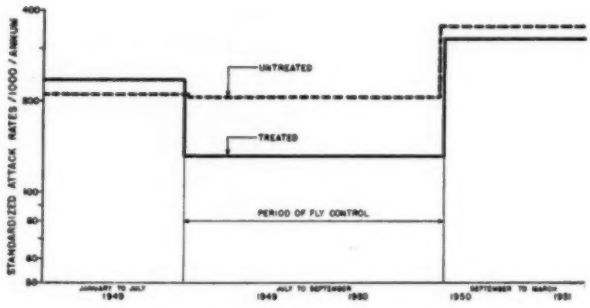


Table 3. Crude and standardized attack rates for reported diarrhea in children under 10 years of age before, during, and after fly control

Period	Treated					Untreated					Probability "P"
	Person-months observed	Cases	Crude rate [1]	Expected cases	Standard rate [1]	Person-months observed	Cases	Crude rate [1]	Expected cases	Standard rate [1]	
Before fly control: Jan. 1949 through Aug. 1949	2, 258	39	207	44. 2	235	2, 660	46	208	46. 8	211	0. 99
During fly control: Sept. 1949 through Aug. 1950	3, 084	29	113	34. 0	132	3, 511	57	195	60. 8	208	. 015
After fly control: Sept. 1950 through Jan. 1951	790	17	258	21. 3	324	896	25	335	25. 6	355	. 40

[1] Per 1,000 a year.

The fact that the period of effective fly control was the only time during the 32 months of this study that the prevalence rate of *Shigella* infection was significantly lower in the treated towns than in the untreated towns is convincing evidence that flies were vectors of *Shigella* organisms. The lowering of the attack rate for diarrheal disease during the period of fly control indicates that a significant portion of this diarrhea resulted from infection with *Shigella* organisms, and again points out the importance of *Shigella* infections as a cause of diarrheal disease.

Summary

Results of this study demonstrated that during effective fly control in an area of moderate diarrheal disease morbidity, the prevalence rate of *Shigella* infections and the morbidity rate from diarrheal disease were significantly lowered.

Chemical insecticides of the residual type were used for control of adult flies. The development of housefly (*M. domestica*) resistance to the DDT initially used resulted in its ineffectualness in maintaining fly control after 10 months. The dieldrin and chlordan sprays substituted for DDT resulted in excellent fly control for about 3 months. After that period these insecticides became even less effective than DDT.

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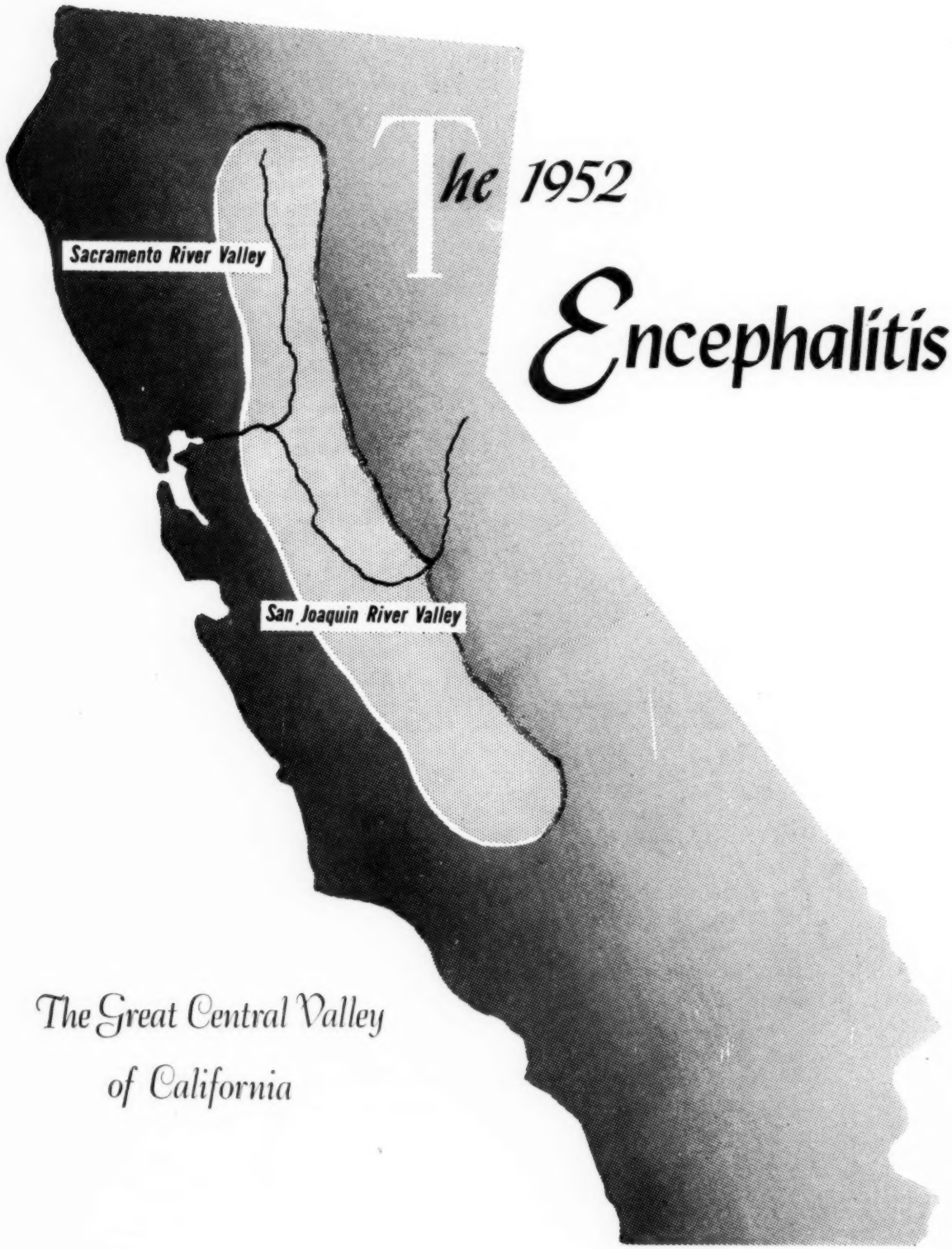
(*7*) Haines, T. W.: Breeding media of common flies. In press.

Vending Stand Program Aids Blind

More than 1,700 blind vending stand operators and employees earned over $3.6 million during 1952, according to figures released by the Office of Vocational Rehabilitation, U. S. Department of Health, Education, and Welfare. These are the highest net earnings ever recorded by the blind men and women who operate vending stands under the guidance of the Nation's State-Federal program for rehabilitating disabled civilians. Gross sales exceeded $18.6 million.

The vending stand program provided in 1952 self-sustaining work for 1,513 blind operators, 196 blind assistants, and 412 other workers employed by the operators.

Five hundred and fifty-eight of the 1,479 vending stands are operated under the program in Federal buildings. The others are on private or non-Federal public premises. The investment in equipment and merchandise totals more than $2.3 million.


The 1952
Encephalitis
Sacramento River Valley
San Joaquin River Valley
The Great Central Valley
of California

OUTBREAK in California

By WILTON L. HALVERSON, M.D., Dr.P.H., WILLIAM ALLEN LONGSHORE, Jr., M.D., M.P.H., and RICHARD F. PETERS, B.S.

DURING THE PAST summer California experienced the highest incidence of infectious encephalitis thus far recorded in this State. A total of 729 human cases was reported from 37 counties during the June to October encephalitis season. Ninety-four percent (689) of the cases occurred in the 20 Central Valley counties. Over half of the cases were confirmed by laboratory tests. Fifty-one deaths were listed as having resulted from this disease. Four hundred cases of encephalitis in horses were reported during the season.

The present account is concerned primarily with the emergency plan worked out to cope with the 1952 outbreak of infectious encephalitis caused by one or the other of two viral agents, namely, viruses of western equine encephalomyelitis and of St. Louis encephalitis. Special studies were undertaken along with emergency control activities to gain as much additional epidemiological information as possible regarding infectious encephalitis, which is endemic in various parts of the country and which becomes epidemic under conditions which are not well understood.

Dr. Halverson is the director of the California State Department of Public Health. He has recently been to South America as a consultant on public health affairs. Dr. Longshore is assistant chief, bureau of acute communicable diseases, and Mr. Peters is chief of the bureau of vector control of the department. Another member of the staff of the department, Arthur C. Smith, took the photographs used in this article.

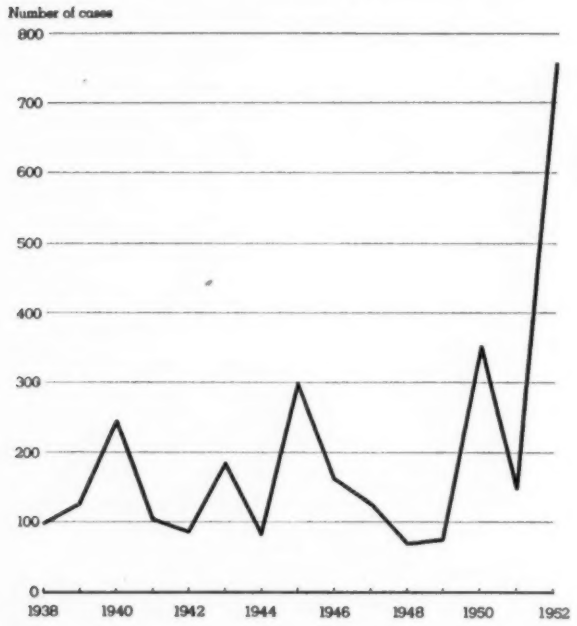
California History, 1938–51

Infection of man with western equine encephalomyelitis virus in California was first suggested by pathological specimens in 1932 but was not confirmed by isolation of the virus until 1938. Prior to that time the virus was considered to produce a disease only in horses. Human infection with the St. Louis virus was first recognized in California in 1939. In the years following the recognition that these agents could cause infection in man, human illness attributable to these viruses in California has been found to be relatively common in the Central Valley areas (see map). Since 1938, certain observations have been recorded concerning the epidemiological and clinical aspects of enceph-

alitis caused by these two specific agents as they have occurred in California.

There has been a wide variation from year to year in the number of cases of infectious encephalitis reported. Incidence of the disease in California was highest in 1945 and 1950, when

Human cases of acute infectious encephalitis reported in California, 1938–52.



320 and 357 human cases, respectively, were reported. The lowest number of cases reported was 71 in 1948. Laboratory studies have been carried out on a good percentage of these cases, particularly since 1945, when the State viral and rickettsial disease laboratory began to perform serologic tests as a routine procedure.

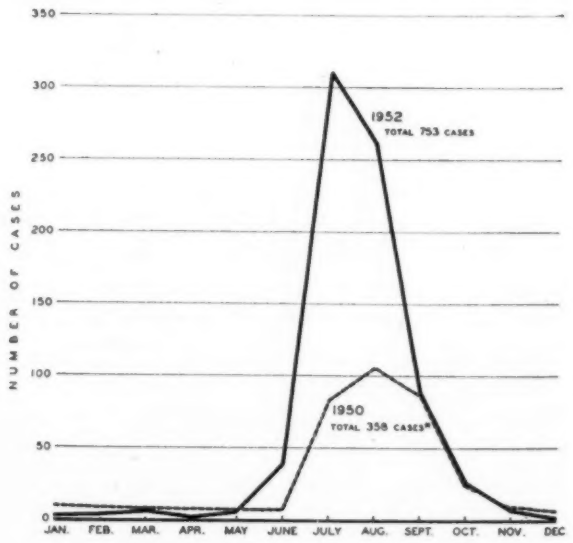
Cases of infectious encephalitis have been reported from 46 of the 58 counties in California. The preponderance of cases, however, has been reported from the Central Valley areas (see map), with the largest number in Kern, Fresno, San Joaquin, and Tulare Counties. Moreover, it is considered significant that the laboratory confirmed human cases of western equine encephalomyelitis and St. Louis encephalitis have been confined almost exclusively to the Central and Imperial Valleys, leaving the coastal areas relatively unaffected.

Laboratory confirmed cases have been reported from only 23 counties of the State, and distribution within the State is limited essentially to the hot, irrigated agricultural sections of the Central and Imperial Valleys. This geographic distribution appears to reflect to some degree the distribution and density pattern of the principal mosquito vector, *Culex tarsalis.* Also, laboratory confirmed cases have occurred only during the months of June through October.

Experience gained over a period of some 12 years, with the seasonal occurrence of endemic arthropod-borne encephalitides in the Central and Imperial Valleys of California, proved valuable in carrying out the emergency encephalitis program in 1952. The following factors also contributed in an important way to the success of the emergency program:

1. The excellent diagnostic facilities provided by the California State Health Department's viral and rickettsial disease laboratory.

Human cases of infectious encephalitis reported in California, by month of onset, 1952 and 1950.



*Total for 1950 includes 6 cases with date of onset not stated.

2. The alertness of the private practicing physician to this particular illness.

3. The awareness of the problem on the part of local health departments.

4. The intensified activity of the mosquito abatement districts.

5. The good working relationships between

the State health department, local health departments, and mosquito abatement districts.

Mosquito-Breeding Factors

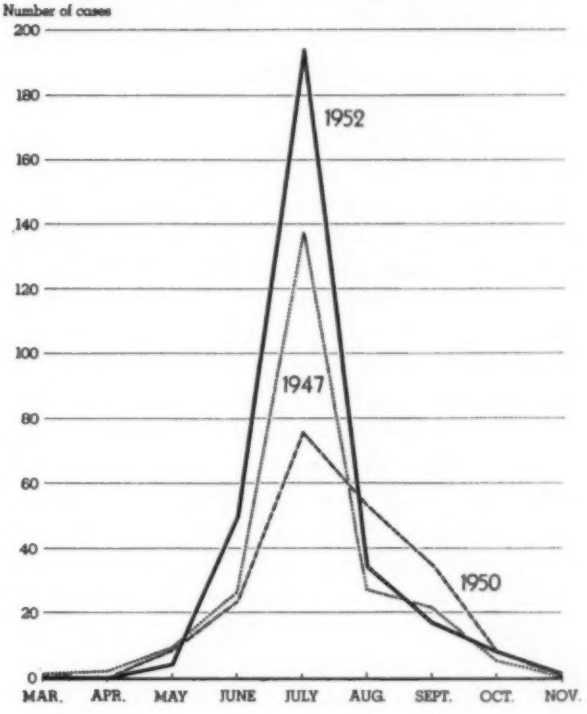
During the winter of 1951–52 one of the heaviest snow packs ever recorded was deposited upon the mountain ranges of California, and rainfall throughout the State was extraordinarily heavy. Winter and springtime average temperatures were relatively moderate, with only a few short periods of critically low temperature to work adversely upon the overwintering mosquito population. These conditions apparently proved optimum for the rapid development and biotic potential of the *C. tarsalis* population during the early spring. Not only was the distribution of this mosquito more general in 1952, but extensive water in the river-bottom lands and various low flooded areas were observed to produce the insect in extraordinary numbers. As is characteristic in California, mosquito population peaks were first reached in the lower San Joaquin Valley and progressed northward through the spring and summer.

Within the 21 mosquito abatement districts comprising the area under organized mosquito control in the Central Valley, intensive control operations were directed against *C. tarsalis*. The breadth of the breeding area, however, exceeded the physical resources available and it was not possible to prevent emergence of a large portion of the adult mosquitoes.

The resistance of *C. tarsalis* to DDT and other chlorinated hydrocarbon insecticides, which had been demonstrated conclusively the previous season, appears to have played a significant part in reducing the effectiveness of chemical control measures used.

Mild spring climatic conditions, aside from greatly favoring the reproduction of *C. tarsalis*, apparently increased its longevity. Moreover, the 1952 flights of this mosquito are believed to have greatly exceeded the range earlier attributed to it. Earlier scientific measurement of the flight pattern of *C. tarsalis* had shown it capable of flights of approximately 2 miles; indications this year were that it flew 5 to 10 miles or more.

Equine encephalomyelitis cases reported in California, by month, 1947, 1950, and 1952.



By June most of the mosquito abatement districts in the San Joaquin Valley had felt the impact of the *C. tarsalis* problem and every emergency measure available was put to work against this mosquito. A further factor of significance was that the production of this mosquito in such large numbers led to its invading homes and biting man in a manner not previously observed. Ordinarily, this mosquito seeks and prefers the blood of either domestic or wild fowl.

By July the important aquatic sources of *C. tarsalis* had largely changed from characteristic natural sources to places incidental to the use of irrigation water in agriculture. This change, and the apparently decreasing adult mosquito populations, gave promise that *C. tarsalis* populations would also subside. In addition, the Central Valley experienced several days of maximum temperatures exceeding 100° F., a condition unfavorable to adult mosquito survival. This provided additional hope that the mosquito population would decrease to a level approaching normal for that time of the year. However, such optimism proved to have been ill-advised.

Beginning of the Outbreak

Since 1943 it had been the practice of the Hooper Foundation of the University of California and the State health department to assign medical personnel to the Kern General Hospital at Bakersfield, during the summer months, to observe all cases admitted to the communicable disease ward. Histories and adequate diagnostic specimens, with thought for the encephalitides, were taken routinely. When a visit was made to the Kern County area in early July for the purpose of placing a student, an unusual increase in the number of encephalitis cases was noted. Some 25 suspect admissions to the Kern General Hospital during June had been recorded.

As July progressed, an increased number of cases of encephalitis was noted from the lower San Joaquin Valley area, where the disease ordinarily makes its first appearance, and two human cases were reported by the health officer of Madera County. Also, the virus laboratory was beginning to receive increased numbers of diagnostic specimens from patients suspected of having encephalitis.

Initial State Planning

In view of these developments, a meeting was held on July 14, 1952, in the office of the director of public health to review the situation with the mosquito abatement officials and the advisory committee of the bureau of vector control. Following this conference a press release was issued stating that a potential epidemic of encephalitis was at hand. A previous telephone conference had been held with the 20 health officers of the endemic areas explaining the plan of action and pointing out that a news release was to be made. Advance copies of the State release were sent to the local health officers so that simultaneous statements could be made in the local press. A second meeting with the vector control advisory committee was held on July 28, 1952, to which all of the health officers of the counties in the endemic areas of the State were invited.

Out of this and a later series of meetings came plans for an intensified program directed specifically toward the suppression of the *C. tarsalis*. This program, "Operation *Culex tarsalis*," was created to augment resources of the 21 existing mosquito abatement districts in the Central Valley and to assist local areas outside these districts in planning emergency control operations.

Administrative Problems

Upon declaration of the emergency, the director of the State department of public health designated the chief of the division of environmental sanitation to coordinate the overall program. The bureau of acute communicable diseases was assigned full responsibility for conducting the epidemiology, and the bureau of vector control was likewise charged with accomplishing the necessary mosquito control. The division of administration provided direct assistance in facilitating the procurement and delivery of needed equipment, materials, and supplies. The viral and rickettsial disease laboratory organized its facilities to perform all the necessary laboratory functions.

At the same time epidemiological followup of cases of encephalitis occurring in the Valley areas was intensified. All indications pointed to the likelihood that the number of cases would increase. It was forecast at that time that there would be between 500 and 700 cases for the disease year. Close followup was thought to be desirable to obtain complete epidemiological data on all cases of central nervous system disease with fever admitted to the hospitals in the 20 counties involved. It was thus necessary to arrange for increased activity on the part of the virus laboratory to process the additional specimens which would be secured through the intensified diagnostic effort.

State and Federal Aid

As State and local agencies moved into action, the Governor, on August 1, 1952, made $250,000 in emergency State funds available. This grant of funds enabled the State health department to provide the financial assistance necessary to marshal materials and manpower for the intensified operation. Many of the Central Valley counties also made funds available for the control program.

At the request of the State director of public

health, the Federal Public Health Service dispatched to California, from stations in various parts of the country, 22 technical personnel from its epidemic intelligence service and other branches to aid both the mosquito control work and epidemiological investigations.

Knowing that professional and technical assistance was forthcoming, the emergency program was planned so that the project would operate in two major fields: a field epidemiological program under the guidance and supervision of the bureau of acute communicable diseases, and an emergency mosquito control program to be carried out under the guidance and supervision of the bureau of vector control.

Epidemiology Program

The emergency epidemiological planning embraced two areas: central office activities, which included the modification of reporting procedures and the issuing of laboratory diagnostic notifications, and emergency field epidemiology, which made use of the services of personnel from the Federal Public Health Service.

The virus laboratory reported to the bureau of acute communicable diseases the results of blood tests and the receipt of first bloods (the first blood specimen of paired series required for diagnosis) submitted for diagnostic encephalitis studies. This information, together with the information obtained in the routine processing of morbidity cards sent in by local health departments, was used to alert the field teams to possible diagnostic cases so that master lists of suspected cases could be prepared for the field personnel.

The field epidemiology program was set up on the basis of four zones, covering the endemic areas of the State. The epidemiology teams—2 physicians and 1 veterinarian—had headquarters in the cities of Sacramento, Stockton, Fresno, and Bakersfield. Each operated through the local health departments and their respective county hospitals, which receive the majority of cases. The epidemiology teams also covered the counties adjacent to headquarters. The zones and their headquarters were:

Zone 1. Headquarters at Sacramento—included the counties of Sutter, Yuba, Yolo, Placer, Sacramento, and Butte.

PLANNING AND ADMINISTRATION

Top: Discussing distribution of encephalitis cases with the San Joaquin County health officer. Center: Planning residual spray program in Stockton. Bottom: Emergency encephalitis control staff meets at Fresno.

EPIDEMIOLOGY

Above: An interview with the family of a patient. Top right: Interviewing an encephalitis patient in the Stockton County Hospital. Lower right: Taking a blood sample from a patient's father.

Zone 2. Headquarters at Stockton—included the counties of San Joaquin, Stanislaus, and Merced.

Zone 3. Headquarters at Fresno—included the counties of Madera, Fresno, Kings, and Tulare.

Zone 4. Headquarters at Bakersfield—included the county of Kern.

The personnel from the Public Health Service's Communicable Disease Center, augmented by members of the State staff, were detailed to the zones. Two physicians were assigned to each zone and a veterinarian to each two zones. The majority of these emergency assignments were for 1 month. This necessitated replacements from time to time due to commitments of the assignees to return to their previous stations. While these replacements could not be avoided, the lack of continuity in the conduct of the epidemiological work was marked, and there was continuing need for orientation of new assignees.

The objective of the field epidemiological studies was to obtain laboratory confirmation of cases of encephalitis and to secure as early and completely as possible the detailed epidemiological information concerning the disease in both humans and horses. The epidemiology teams were so placed that they would be able to undertake studies immediately upon receipt in the field of reports of suspected cases. Briefly, the field operations included these three elements:

Human Cases. In the four epidemiology zones, all known central nervous system encephalitis cases with fever were followed closely. Attempt was made to collect blood from these individuals in the acute and in the convalescent stages of the disease and to obtain complete epidemiological data. Autopsy specimens were secured on fatal cases whenever possible. The great majority of the blood specimens were taken by the hospital staffs, but collection of blood from discharged convalescent patients was the responsibility of the epidemiology teams. Specimens were tested in

the State laboratory by complement fixation or animal neutralization.

Two auxiliary studies were undertaken in special areas. In zones 1 and 2 an associate survey was attempted in which all household associates of known cases were bled once to determine their immunity status. The second special program, carried out in the Fresno County and Stanislaus County Hospitals, included a serologic survey of all febrile hospital admissions, in an attempt to broaden the clinical basis for the diagnosis of encephalitis. When possible, blood specimens were taken both during the acute and convalescent stages of the disease on all febrile admissions to the hospital, regardless of admission diagnosis.

Horse Cases. The State department of agriculture furnished reports on all known cases in horses. Veterinarians on the epidemiology teams collected and submitted to the virus laboratory as many paired bloods as could be obtained from clinical cases in horses and, when possible, secured post-mortem brain specimens for virus recovery and identification.

Special Studies in Outlying Areas. Epidemiological studies were made in selected areas outside of the Central Valley where cases in humans or a large number of cases in horses had been reported. The studies were particularly concerned with the fringe areas outside of the valley counties in order to determine the geographic distribution of the disease. Verification of *C. tarsalis* prevalence was sought and, when possible, mosquito pools were collected for virus recovery studies. These special studies were performed by teams of physicians, veterinarians, and entomologists operating from headquarters on special assignment.

Mosquito Control Program

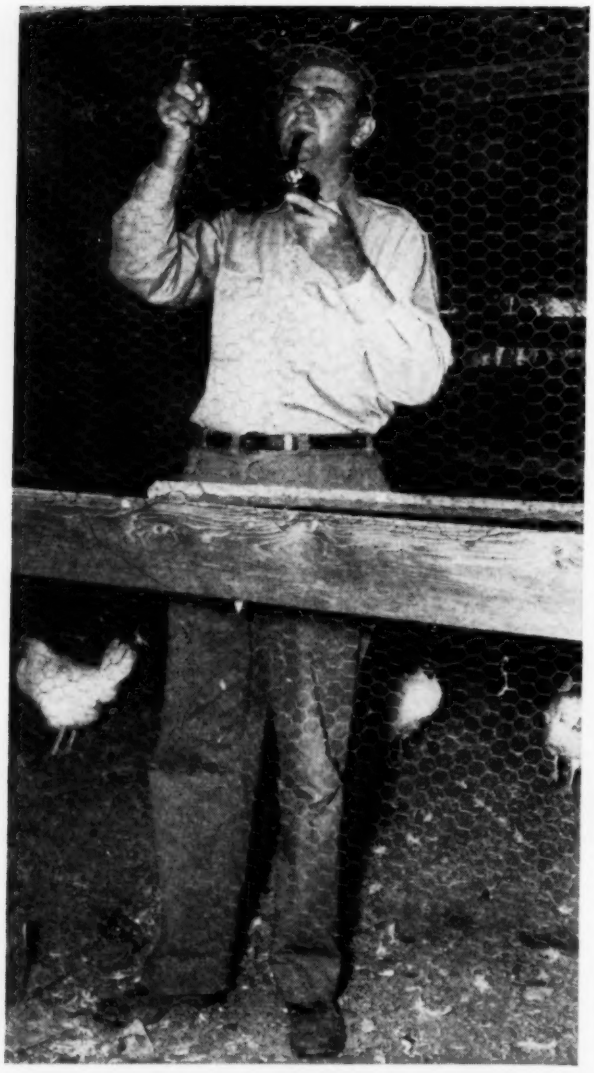
With *C. tarsalis* mosquitoes already numerous, practical decisions had to be made with respect to control measures which would reduce the hazard to the majority of the residents of the valley. This logically resulted in a plan which gave priority consideration to towns and cities and adjacent suburban areas. Any effort to cover the entire valley would have diluted the control resources to such an extent that the prospect for accomplishment would have been generally negated.

VECTOR CONTROL OPERATIONS

Top: Spraying a cotton field for *Culex tarsalis* larvae near Porterville. Center: Laying down an aerosol fog at a fairgrounds near Colusa. Bottom: Larvaciding at home of an encephalitis patient near Stockton.

Since the 21 mosquito abatement districts in the valley had been conducting expanded activities against *C. tarsalis* for a month or more, their principal need was for additional funds with which to expand and further intensify their emergency activities. The uncontrolled

ENTOMOLOGICAL AND VIRUS RECOVERY OPERATIONS



Top left: Collecting *Culex tarsalis* adults in chicken shed at Willows. Top right: Dipping for mosquito larvae in a cotton field at Porterville. Lower left: Sorting mosquitoes. Lower right: Sealing in tubes for shipment to the Virus and Rickettsial Disease Laboratory.

portion of the valley, however, required a complete plan to develop local participation and to provide technical personnel who could direct operations and get control work under way immediately. The same general plan of controlling mosquitoes was recommended for both the mosquito abatement districts and the uncontrolled territory. This consisted of methods designed to reduce an existing adult mosquito population and, if possible, to maintain it at a low level for the period of the emergency.

Essentially, the mosquito control program had three parts: (*a*) space (aerosol) spraying at frequent intervals; (*b*) barrier spraying of a quarter mile band on the periphery of each city and town; and (*c*) intensive larviciding or correction of mosquito sources within cities and towns and outward to a radius of 2 miles.

Control teams were organized combining Communicable Disease Center personnel with members of the staff of the bureau of vector control. Six such teams were established and dispatched to the six major uncontrolled areas of the Sacramento and San Joaquin Valleys, which include all or parts of Tehama, Glenn, Colusa, Placer, San Joaquin, Fresno, Tulare, and Kings Counties. Each team consisted of an engineer, an entomologist, and at least one vector control officer.

Since State funds were largely consumed in the purchase of spray equipment and insecticides, the teams were obliged to stimulate local participation in each individual mosquito control effort. Wherever local health departments were available they were used as the nucleus for conducting and encouraging the mosquito control operations. In some localities the office of the agricultural commissioner served this function in lieu of the health department. As a whole, the response by local officials to the emergency was very good. Local funds were made available in many localities to employ operators. In some cases local workers were loaned to the cause. Each team was provided 1 aerosol machine, 8 exhaust aerosol generators for installation on local vehicles, and 33 cylindrical-type hand sprayers, plus all of the spray equipment which could be recruited in each zone. DDT and diesel oil were provided wherever needed. Airspray operations were conducted in certain areas where this method of operation was indicated.

The bureau of sanitary engineering assisted by inspecting and obtaining rapid treatment or correction of mosquito sources associated with community sewage disposal lands. The bureau of health education provided two health educators to assist the local health departments and other agencies participating in the emergency program and otherwise to facilitate the securing of local support and participation. A leaflet, "Kill Mosquitoes, Protect Your Family From Encephalitis," which contained helpful suggestions to the individual householder, was distributed liberally by local health departments and mosquito abatement districts throughout the Central Valley.

Entomologists, in addition to sampling mosquito prevalence and guiding control operations, collected and submitted over 1,100 pools of mosquitoes to the viral and rickettsial disease laboratory for virus recovery studies.

A Note in Summary

This brief account outlines the organization and plan used in conducting the emergency epidemiology and mosquito control programs in California during the summer of 1952. As is characteristic of any emergency, administrative problems were encountered in the course of this antiencephalitis effort. There was, for example, the lack of a previously conceived specific plan, the problem of how to utilize most effectively the personnel unfamiliar with California conditions, the matter of forced rotation of personnel, communications, fiscal arrangements for participating personnel, and procurement lag. These problems will be covered in detail in a later report.

At this writing it is premature to attempt to evaluate the epidemiology of the outbreak or to comment on the effect of the mosquito control effort in arresting or altering the course of events. Upon completion of the analysis of the multitudinous data collected on both aspects of the subject, such conclusions will be duly reported.

Time Study of Public Health Activities In Mississippi

By J. A. MILNE, M.D., M.P.H., MARGARET E. RICE, M.S., JOHN B. HOZIER, M.D., M.P.H., and GRACE B. TARANTO, B.A.

OF IMMENSE potential value to the public health administrator in planning and executing an adequate public health program is the knowledge of the relative amount of time and effort devoted to each of the categories of public health service. Selection of the best means for determining this relative emphasis among program activities, however, presents a problem of some import. There are possibly infinite varieties of ways for the determination of emphasis among activities, each having certain merits when applied to a particular situation. The time study is a basic approach to the measurement of effort expended when dealing with a multiplicity of activities.

The Setting of the Problem

Public health needs have changed dramatically in the last 10 years. Concepts of a good public health program, and the services it should include, likewise have changed. A program of 10 years ago did not provide many of the services which today are considered necessary if recognized needs are to be met. Even today, it has not been possible to supply the minimum services essential in many communities.

The public health administrator not only must accept today's challenge but also must foresee and plan for future needs. It is as much his responsibility to work now for the expansion required to meet future needs promptly and efficiently as it is to provide currently the best possible service with the money and personnel at his disposal.

With pressures for more services in new and broader areas constantly building up around the public health worker, the evaluation of day-to-day operations frequently has been neglected. It is readily apparent that these same pressures, which urge more, better, and quicker services, make it doubly important that only essential and productive activities be conducted.

A sound, objective evaluation of a public health program is difficult in many instances. Programs have evolved so rapidly that the definition and the development of adequate measures of progress have not kept pace.

The Need for Bench Marks

To determine progress in any sphere, it is first necessary to know just what is being done at present. In the health department, information concerning activities and services is furnished in a variety of ways. There are annual program reports, local activity reports, special project reports, financial and statistical reports, and others. Each ordinarily portrays or emphasizes only a segment of the program.

Dr. Milne is director of the division of county health work, Mississippi State Board of Health, Jackson, and Miss Rice is supervisor of the statistical service for the board. Dr. Hozier and Mrs. Taranto are with the Public Health Service in Region VI, Dr. Hozier as general medical consultant and Mrs. Taranto as public health representative.

For comparative studies of program emphasis, however, actual numbers of visits or counts of services to individuals cannot, in most instances, be used, for one type of visit or service may consume several times the amount of time and effort that goes into another. Therefore, the determination of relative emphasis among the many health department programs cannot be made readily from material currently collected or assembled for other purposes.

Time Studies: Pro and Con

For many years, public health workers have been discussing the pros and cons of time studies of public health activities. The most commonly voiced arguments against time studies are that they are too expensive, too complicated in themselves, too time-consuming, or that they are not representative of actual operations if limited in scope and in the period of time covered.

Many time studies have been made which brought forth such a volume of detailed information that funds and personnel were not available to tabulate and analyze the mass of collected material. Also, results of some have proved unsatisfactory partly because of various defects in construction of the form, inadequate instruction of participants, and selection of a period of time not representative of the agency's activities.

Careful planning before the study is begun, however, should eliminate most, if not all, of the factors which are responsible for major criticisms of time studies.

Arguments favoring time studies aver that a time study of public health activities will produce information sorely needed by the public health administrator, specifically the percentage of the agency's total time devoted to each category of service. This information is of inestimable value to the administrator in determining whether or not the programs currently receiving the greatest emphasis are also the programs shown by the State's vital records and other sources of information to be those which should receive the greatest concentration of public health effort.

Mississippi's Objectives

A time study recently completed by the Mississippi State Board of Health dealt with the activities of all members of the staff and represents a useful approach to time study procedure, particularly in simplicity of execution and in reliability of results.

The immediate objective of the Mississippi time study was the justification of categorical grant expenditures — specifically earmarked funds received by the State board of health from Federal, State, and local sources. An urgent question was being asked: Is the Mississippi State Board of Health properly discharging its obligation to disburse all monies in accordance with Federal and State requirements?

The study was designed to be broad enough in scope not only to serve its immediate purpose but also to provide the basic background data for evaluating the overall State public health program. It was made with what was considered to be a minimum expenditure of time, money, and effort on the part of both participants and directors of the study.

Methodology

The study was made during the fiscal year 1951–52 and involved all employees in the central office of the Mississippi State Board of Health and in the local health departments. Plans for the study were made in consultation with staff members in the local health departments as well as in the central office. Designs for tabulation and analysis were developed well in advance. Every effort was made to define clearly the purposes of the study. Prior to its initiation, group conferences were held with staff members to assure the cooperation of all employees.

Instructions

Written instructions were distributed and explained in detail at these conferences (see pp. 381–385). To avoid confusion in interpretation, definitions used in the instructions conformed to those in the Mississippi daily report of activities with which all local health department personnel were familiar.

That the instructions seemed to be satisfactory to all concerned was indicated by the small number of requests for interpretation during the period of the study and by the apparent accuracy and completeness of the records.

Reminder notices were mailed to all depart-

ments immediately preceding each week of the study.

Daily Time Sheet

The daily time sheet was a single 8½ x 11-inch tumblehead form with space for recording time under specific activities. Space was provided for daily totals and for central office calculations. Illustrated (p. 382) is a sample of the recorded activities of a clerk-typist in a local health department.

The coding on the reverse of the sheet was performed in the central office. Sheets received from participants were processed as follows:

All sheets were checked against a master list of employees obtained from payroll records to assure completeness of return and to code budget and item numbers. This and other coded information for use of the key punch operator were recorded on the reverse of the sheet. Records for part-time employees were held separately, and an identifying code was placed on them for gang-punching.

Time on the daily sheets was summarized for each individual by weekly totals which were recorded on the sheet for each Monday. Although this process required additional clerical time, it provided a check of the total time recorded and also reduced the volume of punch cards. Errors up to 20 minutes were adjusted in the interrelated column. Sheets with greater discrepancies were returned for correction.

On the basis of experience, it was found that some clerical time could have been saved in the central office if the following changes had been made on the daily time sheet:

Printing of code numbers for activities in calculation space.

Provision of space on reverse side for employees to record budget and item numbers.

Use of 6-minute instead of 5-minute intervals in order to cumulate and to punch the time in hours and decimal fractions of hours instead of minutes.

Punch Card Preparation

A 16-column machine punch card was used on which the budget number was carried in columns 1–3; item number, 4–6; classification of position, 7–8; activity, 9–10; minutes, 11–14; and month, 15–16.

For each employee one card was prepared for each activity listed on the summary time sheet. It was possible, therefore, for as many as 15 cards to have been punched for each employee for a particular week although examination of the records for the first week showed the average to be about 6. It was felt, therefore, that less punching and tabulating time would be required in the procedure followed than if separate fields for each activity were designated on the same punch card. In addition, greater flexibility in tabulating was possible under this procedure.

Tabulations

Preliminary tabulations prepared at the end of each week were used in further checking the accuracy of recorded information and in studying seasonal variations which might determine the duration of the study.

Final tabulations were prepared showing the distribution of time by individual budget elements, by activity, and by classification of position. The budgets were separated into two groups in the tables so that time for central office and time for local health departments are shown separately. In the final tabulations, employees of the State tuberculosis sanatorium and of the rapid treatment centers were excluded because these institutions primarily provide inpatient care. Time reported by the division of vital statistics was omitted from the tabulations because this division is not supported by funds from categorical grants.

Interrelated Time Element

Of the total time, approximately 29 percent was recorded as interrelated, a category which included time spent in general services, leave, and other activities (see instructions) which are necessary to the operation of any public health program. Thus, it was felt that for purposes of studying individual budgets, interrelated time should be allocated to the specific activities by some arbitrary method.

For allocation of interrelated time, budgets were divided into three broad categories: local health departments, central office divisions, and central office supportive services. In the final distribution for local health departments, in-

Continued on page 385.

Mississippi State Board of Health Time Study

—Instructions—

Purpose

To provide a basis and method for the proper and equitable distribution of funds within the budgets of the State offices and cooperating local health departments, with particular reference to the so-called categorical grants covering such specialized activities as maternal and child health, venereal diseases, tuberculosis, heart disease, cancer, mental health, and so forth. It is necessary that the State board of health submit a plan for the next budget period which will justify the expenditure of these funds in the various departments which make use of these monies. This plan must provide satisfactory evidence that services are being rendered at least in proportion to the amount of categorical funds which are included within that budget.

In order to formulate a state-wide plan to meet this request, a comprehensive time study of the activities of all personnel in the State office and county health departments is necessary if we plan to continue at least the present level of health services in the State of Mississippi.

All personnel in the State and local subdivisions of the Mississippi State Board of Health are required to participate.

Explanation and Definition

1 The plan of the study will be as follows: Each worker will keep a daily time study for 1 complete week each month, starting at 8 o'clock Monday morning and continuing through the entire working week. A separate sheet will be filled out for each day through Friday and through the 4-hour work period on Saturday morning. County variations due to midweek closures and working all day Saturday will be adjusted according to the local arrangement. Each worker will be held accountable for a full 5½-day workweek. The workday will be on the basis of 7½ hours.

2 In order to provide a sample that will take into account weekly as well as seasonal variations in activities, the study will be kept by weeks as follows until further notice:

4th week in July, beginning Monday, July 23.
1st week in August, beginning Monday, August 6.
2d week in September, beginning Monday, September 10.
3d week in October, beginning Monday, October 15.
4th week in November, beginning Monday, November 26.

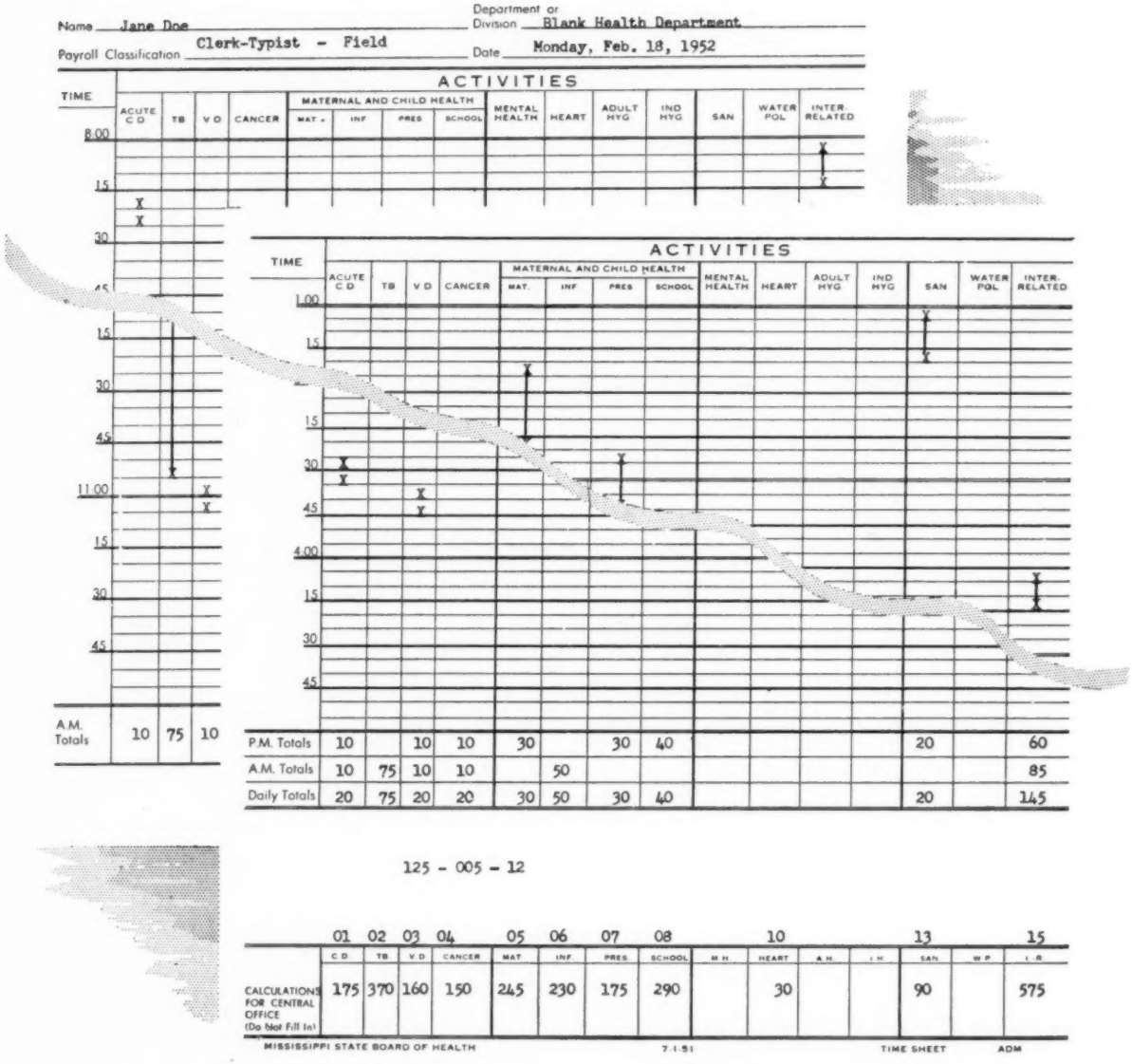
Then begin over again with the week of the first Monday in December and so on until the study period is completed. The occurrence of 5th weeks in certain months will be disregarded and not included in this sequence.

3 Every effort has been made to provide a simplified form for this study. The single daily sheet is made up of a heading for identification and coding purposes, followed by a time and an activity table for the period of 8–12 o'clock each day. Space is provided at the bottom of this page for adding the one-half day morning time totals which are to be carried over to the reverse side of the form which covers the afternoon work period from 1 to 4:30 o'clock. At the bottom of the reverse side, another line is provided for the time totals for the entire workday. The remaining space labeled "calculations for central office" is for central office tabulation purposes and is not to be filled out by the workers at either the State or local level.

(See reproduction of form on next page)

4 The vertical time breakdown of the sheet provides major hourly divisions, 15-minute subdivisions, and is finally further subdivided into 5-minute intervals. Therefore, all activities should be designated to the nearest 5-minutes' time insofar as possible. In showing activities of 15 minutes or less, place the symbol "x" in the center of *each 5-minute space* of the time so devoted. For activities exceeding 15 minutes, a vertical line may be drawn down through the center of the proper activity column. However, an "x" should be placed at

Daily time sheet—front and reverse



Name Jane Doe — Department or Division Blank Health Department

Payroll Classification Clerk-Typist - Field — Date Monday, Feb. 18, 1952

ACTIVITIES

TIME	ACUTE C D	TB	V D	CANCER	MATERNAL AND CHILD HEALTH: MAT.	INF.	PRES.	SCHOOL	MENTAL HEALTH	HEART	ADULT HYG	IND HYG	SAN	WATER POL	INTER-RELATED
8:00															X
15	X														X
30	X														
45															
11:00			X												
15			X												
30															
45															
A.M. Totals	10	75	10												

ACTIVITIES

TIME	ACUTE C D	TB	V D	CANCER	MATERNAL AND CHILD HEALTH: MAT.	INF.	PRES.	SCHOOL	MENTAL HEALTH	HEART	ADULT HYG	IND HYG	SAN	WATER POL	INTER-RELATED
1:00													X		X
15					X								X		
30	X														
45	X		X				X								
4:00			X												
15															X
30															X
45															
P.M. Totals	10		10	10	30		30	40					20		60
A.M. Totals	10	75	10	10		50									85
Daily Totals	20	75	20	20	30	50	30	40					20		145

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	01 C D	02 TB	03 V D	04 CANCER	05 MAT.	06 INF.	07 PRES.	08 SCHOOL	M H.	10 HEART	A H.	I H.	13 SAN	W P.	15 I. R.
CALCULATIONS FOR CENTRAL OFFICE (Do Not Fill In)	175	370	160	150	245	230	175	290		30			90		575

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Instructions—Continued

the beginning and end of this line so that the exact time of the beginning and end of the service can be noted. For example, if a visit or activity takes 1 hour, an "x" is placed in the 5-minute interval or space that it begins, say at 10:15, and the other at 11:15 when it is completed. The line connecting the two time intervals will give the total time of 60 minutes devoted to this activity. This will simplify the recording of such activities that cover one-half day or all-day clinics, which are devoted strictly to one category. All activity time and totals will be designated in minutes to the nearest 5-minute interval.

5 The horizontal activity listing across the top of the page should be interpreted in the same manner as you code your daily activities for the quarterly tabulation of activities. However, it is assumed that all personnel concerned will use their own judgment in making honest estimates where multiple activities in the categories in question occur within a fixed work period such as a generalized conference or clinic wherein a nurse or health officer may see antepartum, infant, preschool, venereal disease, or tuberculosis patients. For example, in a general clinic or conference of 4 hours' duration, of 20 patients registered 10 were antepartum,

Instructions—Continued

5 infants, and 5 venereal disease, the breakdown of the 4 hours should be divided proportionately to *service time* devoted to those three activities.

6 a. *Name.* Use your official payroll name.

b. *Department or division.* Designate county health department or central office division.

c. *Payroll classification.* Use your official merit system classification which is on the payroll.

d. *Date.* Designate the day of the week and date. For example, Monday, July 2.

e. *Acute communicable disease.* Include all activities that would fall under section A of the tabulation of activities. Time devoted to immunizations in generalized clinics, school clinics, and so forth will be recorded here; also, school inspections for communicable diseases.

f. *Tuberculosis.* Include all activities in section C of the tabulation of activities. The taking of X-rays regardless of what type of clinic they are done in should be listed here. Clerical time in X-ray clinics, working with tuberculosis records or tuberculosis register, and so forth will be allocated to this column.

g. *Venereal disease.* Include all activities in section B of the tabulation of activities. Time estimated in taking of blood tests, or seeing patients relative to venereal disease in any type clinics whether it be maternal and child health, food handlers, and so forth will be coded to this column.

h. *Cancer.* Include time spent on special cancer clinics, on visits to cancer patients, special examinations, education, and so forth, in connection with State cancer control programs.

i. *Maternal and child health:*

1. Maternity — Include time covering those activities listed in tabulation of activities.
2. Infant—Include time covering those activities listed in tabulation of activities.
3. Preschool—Include time covering those activities listed in tabulation of activities.
4. School—Include time covering those activities listed in tabulation of activities.

j. *Mental health.* Include time spent in special clinics, home visits, and special examinations in connection with State mental hygiene program. Lunacy hearings should also be coded in this section.

k. *Heart disease.* Include time spent in special clinics, home visits, and special examinations in connection with State heart disease control program.

l. *Adult hygiene.* Include here the items as included in section H of the quarterly tabulation of activities except service to cancer and heart patients which have a special column. General type food handler clinics will fall in this category.

m. *Industrial hygiene.* County personnel who are called on to do special industrial hygiene inspections, investigations, or surveys within their own county as a part of the State industrial hygiene service will code activities in this column.

n. *Sanitation.* In general the major part of the sanitation supervisor's activities as listed in the quarterly tabulation of activities section J will be reported here. Environmental typhus and malaria activities and other special projects, unless otherwise instructed, will also be coded here. When the sanitation supervisor renders service in acute communicable disease control, tuberculosis control, or other health activities with the health officer, nurse, and other members of the staff, these services should be carefully evaluated and credited to the proper category. The health officer, nurse, clerk, and other members of the staff will also use the sanitation column on occasions if their activities are evaluated in the field of sanitation.

o. *Water pollution.* There shall be recorded in this column all time devoted to water pollution control activities; that is, any work carried on by an individual relating to stream sanitation studies, investigations of existing municipal sewage or industrial waste treatment plants, investigations made for the purpose of securing the installation of a municipal sewage or industrial waste treatment plant, and activities related to removal of pollution from any streams, lakes, or coastal waters of the State. This includes time performed by any county sanitation supervisor individually or in company with a representative of the division of sanitary engineering.

p. *Interrelated.* This column should not be abused. Some general administrative items that will fall into this classification are contacts with boards and other officials unless the meeting is for a specific purpose; answering the telephone and meeting the public; preparing of financial reports; administrative correspondence; preparation of quar-

Instructions—Continued

terly reports and narratives; preparation of personnel records and handling of personnel problems; preparation of leave requests; staff conferences for program review or planning; and conferences with lay groups or clubs unless a specific subject or talk is given.

Clerical time has been covered in some of the above listed administrative activities; however, when possible, specific work on certain records, such as immunization cards, tuberculosis records, venereal disease records, milk ledgers, and so forth, should be properly charged to the appropriate column. General indexing, checking and filing of daily reports, recording of laboratory data, vital statistics activities, and other programs that cover multiple health activities should be charged to the interrelated column.

General Remarks

1 *Travel time.* The time going to and returning from a particular activity, clinic, or series of home visits, or inspections, if they are in the same category, will be charged against it. However, in the instance of multiple home visits or inspections where the category or purpose may vary from visit to visit, going to the first premise will be charged to the purpose of that visit; between visit 1 and visit 2, to the purpose of the second visit; and so forth. The return time following the last visit of such a series will be charged to interrelated activity. Travel to and from an outlying mixed general type of clinic will be charged to interrelated.

2 *Leave time.* All leave time will be charged to interrelated activity.

3 *Lost time.* When a patient or individual is not located or not at home, this time will be charged to the planned activity or original purpose of the effort.

4 *Overtime.* No overtime will be coded. All activities will be limited to the hours of the official workday.

5 *Preparation time and posting time.* Such preparation for a clinic or visit will be charged against the major service given during this activity, or allocated proportionately to the time given to the specific activity.

6 *Classes, lectures, movies, exhibits, and so forth.* Code this time against the category you consider received the major interest during the activity.

7 *Lunch hours.* In many departments lunch hours are staggered. Since a 12–1 o'clock interval is not provided for coding worktime, bring the work period backward or forward as the case may be so that it is tabulated between 11–12 or 1–2. For example, personnel taking off for lunch from 11:30–12:30 will list the half hour 12:30 to 1 o'clock as occurring between 11:30 and 12:00. Morning and afternoon breaks for rest period should be charged to interrelated.

8 *Special and part-time personnel.* Label all part-time forms with notation P-T in parentheses by payroll classification.

a. *Health educators.* These activities are sufficiently diversified, so that careful evaluation should be given in coding their activity time properly according to the quarterly tabulation of activities.

b. *Laboratory workers.* This work falls principally into the fields of acute communicable disease control, venereal disease, tuberculosis, maternal and child health, and sanitation, with some specialized activities in certain areas in connection with shellfish control and stream pollution. Code accordingly.

c. *Veterinarians.* Both full- and part-time personnel will be included in the study. The major part of these activities will be coded under sanitation but on occasion certain activities if properly evaluated should be coded under communicable disease, such as rabies control or other epidemiological investigations.

d. *Nurses aides and clinic technicians.* Full-time, part-time or those working on an hourly basis will maintain their own study records.

e. *Dental hygienist and dentist.* This activity is primarily in the field of maternal and child health or school health. Dental hygienists will be held responsible for the reporting of all dental service time.

f. *Venereal disease investigator.* These activities will for the most part be coded under venereal disease control as listed in section B of the quarterly tabulation of activities. However, when taking part in other special projects, these should be accounted for under the proper category.

g. *Special administrative, special clerical, and part-time administrative or clerical personnel.* These are usually concerned with specific activities

or projects and should be coded as indicated. However, general service personnel in the above category can list their activities under interrelated unless otherwise instructed.

h. *Porters and maids.* Charge to interrelated unless employed for special purpose or special clinic.

Office Mechanics and Filing

1 Each person will be held responsible for the neatness, accuracy, and completeness of his own time study sheet. The daily time sheets will be kept by the individual concerned until all the sheets for the week are complete. Each worker will be responsible for *checking* the accuracy of the information and the time totals at the end of each daily sheet, which should be added horizontally across the column marked daily total. This total *will not be more nor less* than 450 minutes for a full workday and will be 240 minutes for a half day.

2 On Monday of the week following the study, the completed forms in proper daily sequence will be turned over to the responsible health officer or secretary or clerk for checking their completeness and to see that all personnel in the department have been accounted for. The responsible health officer or clerk will *be sure to recheck the items* mentioned in paragraph 1, namely the accuracy of the heading and daily totals.

3 The forms for the entire department will be mailed or delivered to the division of county health work, arranged in daily sequence and properly separated by individuals for the entire week, so as to reach the division of county health work not later than 1 week after the end of the completed study week.

Continued from page 380.

terrelated time was distributed according to the percentage distribution of total identified time for all counties combined. In the central office, interrelated time for each division except for selected supportive services was distributed according to the percentage distribution of identified time in that division. Interrelated time in the supportive services—administration office, business office, statistical service, county health administration, personnel office, and merit system—was allocated according to the distribution of all identified time in the central office.

In future analyses, interrelated time reported by the division of vital statistics will be distributed on the same basis as that for the supportive services.

If the purpose of the study were expanded to include more detailed examination of program content, additional subdivisions might be used to account for major activities included in interrelated time, for example, sick and annual leave, and general administration.

Findings of the Study

The comparatively uniform distribution of activity time prompted discontinuation of the study after 8 sample weeks, 1 each in July–December (1951) and January and February (1952). The number of employees varied only slightly during this period with the smallest number, about 795, in October and the largest number, about 810, in July. These employees reported 15,946,165 minutes—or 265,769 hours—for the 8 weeks.

Time Distribution

Final distribution of time and percentages for the various activities are shown in table 1. As was expected, there were wide variations in distribution both in the local health departments and in the central office. Because of the assignment to central office budgets of some employees who serve at the local level, venereal disease investigators and mobile X-ray personnel for example, time and percentage proportions in the central office for several activities exceeded proportions in local health departments.

The percentage distribution of time in local health departments by program activity and by personnel category is shown in table 2. In general, the time for medical, nursing, and clerical personnel was spread throughout all activities and did not show as much concentration as did the time for personnel classified as sanitation, dental, and health education.

Table 1. Mississippi time study: Distribution of time by minutes and percentages for activities in central office and local health departments—8 weeks during July 1951–February 1952

Activity	Total		Central office		Local health departments	
	Minutes	Percent	Minutes	Percent	Minutes	Percent
Total	15, 946, 165	100. 0	5, 648, 245	100. 0	10, 297, 920	100. 0
Acute communicable disease	1, 580, 845	9. 9	429, 597	7. 6	1, 151, 248	11. 2
Tuberculosis	1, 686, 463	10. 6	642, 194	11. 4	1, 044, 269	10. 1
Venereal disease	2, 795, 646	17. 5	1, 796, 605	31. 8	999, 041	9. 7
Cancer	401, 279	2. 5	284, 203	5. 0	117, 076	1. 1
Maternal	1, 703, 052	10. 7	342, 577	6. 1	1, 360, 475	13. 2
Infant	906, 060	5. 7	119, 560	2. 1	786, 500	7. 6
Preschool	514, 692	3. 2	64, 450	1. 1	450, 242	4. 4
School	1, 740, 958	10. 9	572, 184	10. 1	1, 168, 774	11. 3
Mental health	347, 360	2. 2	286, 719	5. 1	60, 641	. 6
Heart	150, 345	. 9	129, 532	2. 3	20, 813	. 2
Adult hygiene	265, 024	1. 7	44, 420	. 8	220, 604	2. 1
Industrial hygiene	149, 159	. 9	125, 343	2. 2	23, 816	. 2
Sanitation	3, 654, 582	22. 9	773, 517	13. 7	2, 881, 065	28. 0
Water pollution	50, 700	. 3	37, 344	. 7	13, 356	. 1

Credited to certain types of personnel is time spent in activities usually considered outside their province. This was primarily the result of the procedure used in allocating interrelated time. For instance, some time of the dental hygienists was credited to environmental sanitation and some time of the sanitarians to cancer control. All personnel in local health departments assist each other when necessary but probably not to the extent indicated in table 2.

Categorical Comparisons

The first column of table 3 shows the proportions of categorical grants plus matching funds for fiscal year ending June 30, 1952. The second column of this table shows the percentages of personnel time devoted to categorical programs.

Table 2. Mississippi time study: Percentage distribution [1] of time by activity and by classification of position in local health departments—8 weeks during July 1951–February 1952

Activity	Total	Medical	Nursing	Dental	Laboratory	Health education	Sanitation	Clerical	Other
Percent		100. 0	100. 0	100. 0	100. 0	100. 0	100. 0	100. 0	100. 0
Acute communicable disease	1, 151, 248	11. 0	14. 9	2. 2	15. 6	6. 4	1. 5	13. 4	13. 8
Tuberculosis	1, 044, 269	9. 0	12. 2	2. 0	9. 4	6. 7	1. 4	14. 0	20. 4
Venereal disease	999, 041	13. 5	8. 6	1. 9	9. 2	5. 5	1. 6	16. 3	16. 4
Cancer	117, 076	2. 1	1. 5	. 2	. 4	2. 8	. 1	1. 1	. 7
Maternal	1, 360, 475	15. 5	20. 1	3. 0	14. 5	6. 4	1. 4	11. 9	16. 9
Infant	786, 500	8. 8	11. 7	1. 5	3. 2	3. 2	. 8	7. 3	7. 7
Preschool	450, 242	4. 7	6. 8	5. 1	3. 2	2. 5	. 5	4. 0	3. 6
School	1, 168, 774	14. 6	14. 4	77. 4	7. 7	46. 0	1. 2	11. 2	8. 2
Mental health	60, 641	1. 5	. 7	. 6	. 2	2. 3	. 1	. 4	. 3
Heart	20, 813	. 5	. 3	0	0	. 8	0	. 1	. 1
Adult hygiene	220, 604	3. 8	2. 2	. 4	3. 5	5. 1	. 2	2. 7	3. 3
Industrial hygiene	23, 816	. 5	. 1	0	. 2	. 2	. 4	. 2	. 2
Sanitation	2, 881, 065	14. 2	6. 4	5. 5	32. 5	11. 9	90. 5	17. 4	8. 3
Water pollution	13, 356	. 2	0	0	. 1	0	. 3	. 1	0
Total minutes	10, 297, 920	903, 870	3, 973, 905	39, 840	148, 375	161, 850	2, 141, 230	2, 721, 080	207, 770

[1] Percentages less than 0.1 are shown as 0.

Table 3. Mississippi time study: Percentage distribution of time and categorical grants by programs

Program	Categorical grants [1]	Time
Total	100. 0	100. 0
Tuberculosis	6. 3	10. 6
Venereal disease	8. 6	17. 5
Cancer	2. 9	2. 5
Maternal and child health	13. 8	30. 5
Mental health	2. 6	2. 2
Heart	2. 0	. 9
Water pollution	. 5	. 3
General and other	63. 1	35. 4

[1] Appropriations for fiscal year 1951–52 classified by category of grant plus matching funds. Includes funds encumbered in 1951 but paid in 1952 and excludes encumbrances in 1952 paid in 1953. Excludes funds spent at the rapid treatment centers and at the tuberculosis sanatorium.

It will be noted that in the relatively large categorical grants (maternal and child health, venereal disease, and tuberculosis) the percentages of personnel time devoted to the specified programs were greater than the percentages of total categorical grants plus matching funds.

In the relatively small categorical grants (cancer, mental, heart disease, and water pollution) the differences were small, and apparently were due to the fact that expenditures in these programs for hospital service, for supply and equipment purchases, and for special training courses were relatively large compared to personnel service costs.

Further Use of Data

The data obtained provide a basis for crude evaluations of several major programs and suggest ways of studying the services provided. For example, the director of the maternal and child health program will be interested to know that 36.5 percent of all local health department time was devoted to maternal, infant, preschool, and school activities (table 1). He and the local administrators will want to know whether the variation from a low of 25.3 percent in one county to a high of 52.2 percent in another is commensurate with maternal and child health problems in those counties or whether the program is overbalanced because of pressures, interest, or lack of personnel. He can study the contribution of types of personnel to his programs, and he will probably wish to break down all data on maternal and child health services to determine where concentration is occurring.

Local conditions may offer complete justification for the wide variations in activity time for

Table 4. Mississippi time study: Percentage distribution of time by activity and by week of study in local health departments—8 weeks during July 1951–February 1952

Activity	Total	July, 4th week	August, 1st week	September, 2d week	October, 3d week	November, 4th week	December, 1st week	January, 2d week	February, 3d week
Total	100. 0	100. 0	100. 0	100. 0	100. 0	100. 0	100. 0	100. 0	100. 0
Acute communicable disease	11. 2	13. 5	14. 5	10. 3	10. 8	10. 2	11. 0	9. 7	10. 0
Tuberculosis	10. 1	11. 9	11. 1	10. 3	9. 5	9. 4	8. 6	9. 3	11. 3
Venereal disease	9. 7	11. 1	11. 3	11. 1	8. 8	9. 2	9. 2	8. 8	8. 5
Cancer	1. 1	. 9	. 8	. 8	2. 3	1. 1	1. 5	. 8	. 8
Maternal	13. 2	14. 1	14. 3	13. 4	11. 8	12. 4	13. 0	14. 0	12. 7
Infant	7. 6	7. 8	8. 2	7. 3	7. 1	7. 5	7. 8	7. 9	7. 3
Preschool	4. 4	5. 3	5. 2	4. 3	3. 8	3. 8	3. 9	4. 3	4. 4
School	11. 3	4. 7	4. 9	9. 6	15. 2	14. 8	12. 5	13. 5	13. 9
Mental health	. 6	. 6	. 5	. 5	. 6	. 6	. 7	. 5	. 6
Heart	. 2	. 1	. 1	. 2	. 3	. 2	. 2	. 1	. 4
Adult hygiene	2. 1	2. 2	2. 2	2. 3	2. 0	1. 8	2. 0	2. 5	2. 0
Industrial hygiene	. 2	. 6	. 4	. 2	. 1	. 1	. 2	. 1	. 1
Sanitation	28. 0	26. 6	26. 2	29. 5	27. 5	28. 8	29. 1	28. 2	27. 6
Water pollution	. 1	. 5	. 2	0	. 1	0	0	. 1	. 1

NOTE: Interrelated time in each week was distributed according to the distribution of identified time in that week.

individual health departments, but the wise administrator will investigate to find out why one department spent only 4.4 percent of its time on acute communicable disease and why another county spent 24.4 percent; why the range for venereal disease was from 3.1 to 24.0 percent and for sanitation, from 6.2 to 44.0 percent.

It is planned to make such tabulations of activities by counties available to the local health departments and to assign each county a tabulation number known only to itself.

Sampling Investigations

The percentage distributions of time in local health departments by activity for each week are shown in table 4. The relative uniformity in the last six sample weeks will be noted. In this study, average deviations from the total distribution were smallest during the first week in December and during the second week in September. Relatively small deviations also occurred during the second week in January, the third week in February, the fourth week in November, and the third week in October. It is likely that the larger variations which occurred during the fourth week in July and the first week in August were due to seasonal circumstances and not to the choice of week. Larger proportions of interrelated time were recorded in these months because of employee vacations. Also, relatively little time was assigned to school activities because few schools were in session.

Policies of the State board of health probably influence many of the variations. Examinations of school children are customarily made in October and November of each year, and the proportions in table 4 reflect this increased activity. Time spent on tuberculosis control varied in part because of reduction in mobile screening services during the fall months when equipment was undergoing repair. Immunizations and epidemiological investigations of acute communicable diseases increased the time spent on this category during the summer months. Venereal disease activity was highest during the first 3 weeks of the study in agreement with the increase noted in other venereal disease reports for this time of the year. The variations in sanitation time were small and did not follow a trend. Since most time in this category was contributed by personnel assigned to sanitation, a relatively stable group, the slight changes may have occurred because of special sanitation activities performed by other personnel groups. The time for cancer activities was relatively high during the fall, especially in October, when many of the public health nurses attended in-service training courses in cancer.

Valid Sample Week

The distributions, especially uniform during the last 6 sample weeks, indicate that a reasonably accurate estimate of total local health department time could have been obtained if the study had been limited to any one of the last 6 sample weeks. From a practical standpoint, the second week in September would probably be the period of choice in Mississippi.

The weekly variations in the central offices were smaller than those in the local health departments, and any one of the 8 weeks would have furnished a satisfactory distribution of time.

Table 5. Mississippi time study: Distribution of time by activity for sample composed of every fifth local health department budget and for all local health departments combined—8 weeks during July 1951–February 1952

Activity	13-county sample		All local health departments (percent)
	Minutes	Percent	
Total	1, 833, 980	100. 0	100. 0
Acute communicable disease	200, 839	11. 0	11. 2
Tuberculosis	194, 908	10. 6	10. 1
Venereal disease	192, 959	10. 5	9. 7
Cancer	26, 772	1. 5	1. 1
Maternal	269, 547	14. 7	13. 2
Infant	142, 624	7. 8	7. 6
Preschool	80, 343	4. 4	4. 4
School	212, 049	11. 6	11. 3
Mental health	13, 194	. 7	. 6
Heart	3, 437	. 2	. 2
Adult hygiene	44, 896	2. 4	2. 1
Industrial hygiene	7, 935	. 4	. 2
Sanitation	438, 931	23. 9	28. 0
Water pollution	5, 546	. 3	. 1

Size of Population

To check the validity of further sampling, the punch cards were sorted in terms of the local health department budgets. They were arranged in order of population size of the counties, and every fifth health department was selected. By this method, 11 county or district health departments were chosen including 13 of the 80 counties with full-time health departments and an aggregate population of 379,296, or about 18 percent of the State population served by local health departments.

Employee time in this group is shown in table 5. Some changes from the distribution for all departments will be noted, but the percentages for this sample furnished another estimate of activity distribution which may be adequate for practical purposes. This estimate, however, did not agree so closely as the single weeks in September, November, December, January, or February agreed with the total distribution.

The selection of the sample probably introduced some bias. Although this sample was based on population, and the rural-urban composition was approximately the same as for the entire State, the sample was somewhat weighted with nonwhites. However, this did not cause any apparent deviations in activity time.

The only consistent difference was in the proportion for sanitation activities. This percentage was lower in the selected counties than in the entire State for every week of the study, as a comparison of tables 4 and 6 will show.

Evidently, a sample of counties based on population size of counties does not provide a representative sample for sanitation activities since problems in this category are less likely to be directly related to the number of persons than in other categories. In this sample, for example, little shellfish sanitation, no military installations, and no high milk-producing areas were included, and consequently, important parts of the sanitation program were omitted.

The weekly distributions for this sample are shown in table 6. In these distributions, as in the total, the average deviations were highest during the fourth week in July and the first week in August and lowest during the other 6 weeks of the study. All these deviations are greater than those for single weeks for all employees and also for the 8 weeks combined for the sample group of counties. An estimate of activity time, however, could have been made from a time study of every fifth county according to population size for a period of only 1 week. And, further reductions in the sample could have been made. In the other samples

Table 6. Mississippi time study: Percentage distribution of time by activity by week of study for sample composed of every fifth local health department budget—8 weeks during July 1951–February 1952

Activity	Total	July, 4th week	August, 1st week	September, 2d week	October, 3d week	November, 4th week	December, 1st week	January, 2d week	February, 3d week
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Acute communicable disease	11.0	11.8	12.5	9.3	10.5	10.0	14.5	9.1	10.0
Tuberculosis	10.6	11.4	11.0	10.1	10.1	9.5	8.9	10.1	13.8
Venereal disease	10.5	11.9	11.5	12.6	9.7	9.1	10.3	9.8	9.6
Cancer	1.5	.8	1.1	.6	4.2	1.3	1.2	1.4	1.0
Maternal	14.7	15.5	16.8	15.8	12.9	14.6	13.7	15.9	12.9
Infant	7.8	7.8	8.3	8.7	7.5	7.9	7.1	7.7	7.4
Preschool	4.4	6.7	5.5	4.8	3.6	3.6	3.7	3.8	3.7
School	11.6	5.9	6.3	10.2	14.3	15.8	11.9	12.6	14.4
Mental health	.7	.8	.3	.5	.6	.9	1.1	.6	1.0
Heart	.2	0	0	.1	.3	.1	.2	.1	.6
Adult hygiene	2.4	1.9	2.2	1.8	1.9	2.4	2.3	4.6	2.3
Industrial hygiene	.4	1.7	.2	.4	.3	.1	.3	.4	.1
Sanitation	23.9	22.8	24.1	25.0	23.6	24.5	24.8	23.8	23.0
Water pollution	.3	1.0	.3	.2	.5	.2	.1	.1	.1

NOTE: Interrelated time in each week was distributed according to the distribution of identified time in that week.

illustrated here, some accuracy has been sacrificed; that is, the smaller the sample, the greater the error.

Of the four estimates of activity distribution shown, the most accurate is assumed to be the one based on total employees for the entire 8 sample weeks (table 2).

Summary and Conclusions

The Mississippi time study included all State and local health department employees for a period of 8 sample weeks. It produced with what is considered to be a minimum expenditure of time and effort the information for which it was designed: factual data for the justification of categorical grant expenditures; and information for crude evaluation of program activities.

On the basis of the crude evaluations of several of the larger programs, there is evidence of the need for further study in these areas.

Analysis indicates that a reasonably accurate estimate of total time distributions could have been obtained if the study had been further limited in time to any 1 of the last 6 sample weeks. An estimate of activity distribution procured by limiting the study in area did not agree so closely with the total distribution as did the single weeks. However, even this variation is not necessarily great enough to preclude the use of smaller areas in studies of this kind. Apparently, a reasonably accurate estimate of time devoted to the various health department activities can be obtained from a study made on the basis of a relatively short period of time, probably without including the entire State and local staffs.

Public Health Service Staff Announcements

Dr. Louis L. Williams, Jr., a career officer of the Public Health Service since 1915 and chief of the Division of International Health since 1948, retired January 31, 1953. A specialist in malaria control research, Dr. Williams long directed Public Health Service malaria investigations. He served as field director of rural malaria control investigations in Virginia from 1921 to 1930 and was in charge of malaria studies at the National Institutes of Health from 1926 to 1940. Before World War II, Dr. Williams headed the malaria commission to China-Burma Highway, and at the war's start he organized malaria control in areas of camps and war industries. In 1943, he was detailed to the U. S. Army as malariologist in the Mediterranean Theater of Operations.

From 1945 to 1948, Dr. Williams was Public Health Service liaison officer to the Department of State, assisting in organizing its international health affairs branch. He was a member of the United States delegation to the International Health Conference, which in 1946 drew up the constitution of the World Health Organization. He also served as a delegate to the Pan American Sanitary Conference in Caracas in 1947 and as a member of the organizing committee, Fourth International Congress on Tropical Medicine and Malaria, in 1947.

Dr. H. Trendley Dean, director of the National Institute of Dental Research, National Institutes of Health, Public Health Service, retired April 1, 1953. A pioneer in research leading to the use of fluoridated water to reduce dental decay in children, Dr. Dean made the discovery that people using fluoride drinking water had teeth that resisted decay. He has been a Public Health Service officer since 1921, and in recent years at the National Institutes of Health he directed a broad program of investigation into the diseases of softening tissues, pyorrhea, and other oral conditions.

Dr. Dean's interest in the relationship of fluoride to dental caries grew out of his earlier work on mottled enamel. Dr. Dean was assigned in 1931 to determine where in the United States people drank water containing fluoride and how it caused dental fluorosis—mottled enamel. In 1942, after a study of 21 cities, he and his colleagues at the National Institutes of Health were able to determine that one part of fluoride to a million parts of water was sufficient to inhibit dental decay without causing fluorosis.

Dr. Francis A. Arnold, Jr., associate director of the National Institute of Dental Research since 1948, has been named as the new director. Dr. Arnold, who has been with the Public Health Service since 1934, has worked with Dr. Dean since the first studies on the relationship of fluoride to dental caries were made in 1937. He made the first report on production of carious teeth in hamsters, these animals having since become one of the principal experimental animals in this work.

Twenty Years of Followup Experience In a Long-Range Medical Study

By EUNICE RIVERS, R.N., STANLEY H. SCHUMAN, M.D., LLOYD SIMPSON and SIDNEY OLANSKY, M.D.

ONE OF THE longest continued medical surveys ever conducted is the study of untreated syphilis in the male Negro. This study was begun by the Public Health Service in the fall of 1932 in Macon County, Ala., a rural area in the eastern part of the State, and is now entering its twenty-second year (*1–4*). This paper is the first report dealing with the nonmedical aspects of the study. The experiences recounted may be of value to those who are planning continuing studies in other fields.

In beginning the study, schedules of the blood-drawing clinics throughout the county were announced through every available source, including churches, schools, and community stores. The people responded willingly, and 600 patients were selected for the study—400 who had syphilis and, for controls, 200 who did not. The patients who had syphilis were all in the latent stage; any acute cases requiring treatment were carefully screened out for standard therapy.

Miss Rivers, a public health nurse with the Division of Venereal Disease, Public Health Service, is associated with the Macon County Health Department, Tuskegee, Ala. Mr. Simpson is a venereal disease field investigator for the Public Health Service in Region VI. Dr. Schuman is with the clinical investigations section of the Venereal Disease Research Laboratory in the Communicable Disease Center, Chamblee, Ga., and Dr. Olansky is director of the laboratory.

At Tuskegee, each of the 600 patients initially was given a complete physical examination, including chest X-rays and electrocardiograms. Careful histories were taken and blood tests were repeated. Thereafter, each of the patients was followed up with an annual blood test and, whenever the Public Health Service physicians came to Tuskegee, physical examinations were repeated.

There have been four surveys: in 1932, 1938, 1948, and 1952. Between surveys contact with the patients was maintained through the local county health department and an especially assigned public health nurse, whose chief duties were those of followup worker on this project. The nurse also participated in a generalized public health nursing program, which gave her broad contact with the families of the patients and demonstrated that she was interested in other aspects of their welfare as well as in the project. The nurse was a native of the county, who had lived near her patients all her life, and was thoroughly familiar with their local ideas and customs.

A most important phase of the study was to follow as many patients as possible to postmortem examination, in order to determine the prevalence and severity of the syphilitic disease process. Cooperation of patients with this plan was sought by offering burial assistance (through a private philanthropy, the Milbank Memorial Fund) on condition that permission be granted for autopsy. For the majority of these poor farmers such financial aid was a real boon, and often it was the only "insurance" they

could hope for. The Federal Government offered physical examinations and incidental medication, such as tonics and analgesics, but was unable to provide financial assistance on a continuing basis. The Milbank Memorial Fund burial assistance made it possible to obtain a higher percentage of permissions for postmortem examinations than otherwise would have been granted.

Transportation to the hospital for X-rays and physical examination was furnished by the nurse. Her car was too small to bring in more than two patients at one trip; therefore, two men were scheduled for examination in the morning and two for the afternoon. During the early years of the study, when the county was strictly a rural one, the roads were very poor, some being impassable during the rainy season. Very often, the patients spent hours helping to get the car out of a mudhole. Now, with modern conveniences (telephones, electricity, cars, and good roads) the nurse's problems are fewer than in the early days.

Having a complete physical examination by a doctor in a hospital was a new experience for most of the men. Some were skeptical; others were frightened and left without an examination. Those who were brave enough to remain were very pleased. Only one objection occurred frequently: the "back shot," never again! There are those who, today, unjustifiably attribute current complaints (backaches, headaches, nervousness) to those spinal punctures.

Followup

The patients have been followed through the years by the same nurse but by different doctors. Some doctors were liked by all the patients; others were liked by only a few. The chief factor in this was the length of time doctor and patients had to get to know each other. If the doctor's visit to the area was brief, he might not have time to learn and to understand the habits of the patients. Likewise, the patients did not have an opportunity to understand the doctor. Because of their confidence in the nurse, the patients often expressed their opinion about the doctor privately to her. She tried always to assure them that the doctor was a busy person interested in many things, but that they really were first on his program.

It is very important for the followup worker to understand both patient and doctor, because she must bridge the gap between the two. The doctors were concerned primarily with obtaining the most efficient and thorough medical examination possible for the group of 600 men. While they tried to give each patient the personal interest he desired, this was not always possible due to the pressure of time. Occasionally, the patient was annoyed because the doctor did not pay attention to his particular complaint. He may have believed that his favorite home remedy was more potent than the doctor's prescription, and decided to let the whole thing go. It then became the task of the nurse to convince him that the examinations were beneficial. If she failed, she might find that in the future he not only neglected to answer her letters but managed to be away from home whenever she called. Sometimes the doctor grumbled because of the seemingly poor cooperation and slowness of some of the patients; often the nurse helped in these situations simply by bridging the language barrier and by explaining to the men what the doctor wanted.

Sometimes the nurse assisted the physician by warning him beforehand about the eccentricities of the patients he was scheduled to see during the day. For example, there was the lethargic patient with early cancer of the lip who needed strong language and grim predictions to persuade him to seek medical attention. On the other hand, there was the hypochondriac who overheard the doctor mention the 45° angle of rotation of his body during the X-ray examination; the next day, the entire county was buzzing with gossip about their remarkable friend who was "still alive, walking around with his heart tilted at a 45° angle."

Following a group of patients in a specialized field over a period of years becomes monotonous to patient and nurse, and both could lose interest easily. For the patients, the yearly visits by the "Government doctor," with free medicines, revived their interest. The annual blood tests and the surveys were always scheduled at "slack" times, between fall harvest and spring planting. The patients congregated in groups at churches and at crossroads to meet the nurse's

car in the morning. As the newness of the project wore off and fears of being hurt were relieved, the gatherings became more social. The examination became an opportunity for men from different and often isolated parts of the county to meet and exchange news. Later, the nurse's small car was replaced with a large, new, Government station wagon. The ride to and from the hospital in this vehicle with the Government emblem on the front door, chauffeured by the nurse, was a mark of distinction for many of the men who enjoyed waving to their neighbors as they drove by. They knew that they could get their pills and "spring tonic" from the nurse whenever they needed them between surveys, but they looked forward happily to having the Government doctor take their blood pressure and listen to their hearts. Those men who were advised about their diets were especially delighted even though they would not adhere to the restrictions.

Because of the low educational status of the majority of the patients, it was impossible to appeal to them from a purely scientific approach. Therefore, various methods were used to maintain and stimulate their interest. Free medicines, burial assistance or insurance (the project being referred to as "Miss Rivers' Lodge"), free hot meals on the days of examination, transportation to and from the hospital, and an opportunity to stop in town on the return trip to shop or visit with their friends on the streets all helped. In spite of these attractions, there were some who refused their examinations because they were not sick and did not see that they were being benefited. Nothing provoked some of the patients more than for a doctor to tell them that they were not as healthy as they felt. This attitude sometimes appeared to the examining physician as rank ingratitude for a thorough medical workup which would cost anyone else a large amount of money if sought at personal expense. At these times the nurse reminded the doctor of the gap between his education and health attitudes and those of the patients.

When a patient asks the nurse for help because he is a "Government patient" and she explains there are no funds for this, he may point out that he needs assistance while he is living, not after he is dead. Whenever the nurse heard this complaint, she knew that there was danger of a lost patient. She appealed to him from an unselfish standpoint: What the burial assistance would mean to his family, to pay funeral expenses or to purchase clothes for his orphaned children. Even though a large number wished they might derive more benefits

A Career in Nursing Service

Miss Rivers knows her patients well. She was born in Georgia and has lived in that vicinity her entire life. After graduation from the Tuskegee Institute School of Nursing in 1922, she joined the Alabama State Department of Health. There she was assigned to the bureau of maternal and child welfare where she helped farmers and their wives in the rural areas of Alabama with problems of home nursing and home hygiene. In a later assignment with the Alabama bureau of vital statistics, she assisted midwives in problems of rural nursing and in their vital statistics reports. After 8 years of work for the State, she returned to Tuskegee to be night supervisor of the John A. Andrew Memorial Hospital.

In 1932, Miss Rivers was offered a position as night supervisor in a New York general hospital. She chose, instead, to stay in Alabama as a scientific assistant with the Division of Venereal Disease of the Public Health Service. Miss Rivers still holds this position, in which she cooperates with the physicians and contact investigators on the Tuskegee untreated syphilis study. She also is the contact worker with the venereal disease control program in addition to assisting in the general nursing service of the Macon County Health Department.

Among her deepest convictions is the belief that rural areas desperately need good and sympathetic nurses to participate in and carry out effectively public health programs, as well as private medical care. She feels very strongly, on the basis of her own experience, that the girl who is trained in nursing in a rural area is much more likely to live and practice nursing in that area. Miss Rivers feels that, had she taken the offer to go to New York City many years ago, she probably would never have returned to the people with whom she is so familiar and for whom she feels she now can do her small part to contribute to better health and advances in public health.

from being "Government patients," most of them answered the call to meet the doctor, some willingly, others after much persuasion.

The study group was composed of farmers who owned their homes, renters who were considered permanent residents, and day laborers on farms and in sawmills. The laborers were the hardest to follow. Some of the resident farmers traveled to other sections seeking work after their own crops had been harvested, but they came back when it was time to start planting. An effort was made continually through relatives to keep informed of the patients' most recent addresses, and this information regularly has been placed in their records. During the 20 years of the study, 520 of the original 600 men have been followed consistently if living, or to autopsy. It is possible that some of the 80 now considered lost will at some time return to the county or write the nurse from distant places for medical advice.

Autopsies

The excellent care given these patients was important in creating in the family a favorable attitude which eventually would lead to permission to perform an autopsy. Even in a friendly atmosphere, however, it was difficult for the nurse to approach the family, especially in the early years of the project, because she herself was uneasy about autopsies. She was pleasantly surprised to receive fine response from the families of the patients—only one refusal in 20 years and 145 autopsies obtained. Finally, the nurse realized that she and not the relatives had been hesitant and squeamish.

Sometimes the family asked questions concerning the autopsy, but offered no objections when they were assured that the body would not be harmed. If the patient had been ill for a long time and had not been able to secure any relief from his symptoms, they were anxious to know the reason. If he had died suddenly, they were anxious for some explanation. They also feared that some member of the family might have the same malady, and that information learned from the autopsy might aid them. Now, after many years, all of the patients are aware of the autopsies. When a member of "Miss Rivers' Lodge" passes, his surviving colleagues often will remind the family that the doctor wants "to look at his heart." Autopsies today are a routine; neither nurse nor family objects.

One cannot work with a group of people over a long period of time without becoming attached to them. This has been the experience of the nurse. She has had an opportunity to know them personally. She has come to understand some of their problems and how these account for some of their peculiar reactions. The ties are stronger than simply those of patient and nurse. There is a feeling of complete confidence in what the nurse advises. Some of them bring problems beyond her province, concerning building, insurance, and other things about which she can give no specific advice. She directs them always to the best available sources of guidance. Realizing that they do depend upon her and give her their trust, she has to keep an open mind and must be careful always not to criticize, but to help in the most ethical way to see that they get the best care.

Conclusions

Experience with this project has made several points clear which may benefit anyone now engaged in planning or executing a long-range medical research study:

1. Incentives for maximum cooperation of the patients must be kept in mind. What appears to be a real incentive to an outsider's way of thinking may have little appeal for the patient. In our case, free hot meals meant more to the men than $50 worth of free medical examination.

2. The value of rapport and sympathy between patient and physician, and between patient and nurse or followup worker never can be overestimated. Material incentives can merely supplement and support a basic feeling of good will. A kind word is often worth a carton full of free medicines. A single home visit is worth more than a dozen letters on impressive stationery.

3. Changes in key personnel over the years in a long-range project can seriously weaken the project by upsetting continuity and familiar routine. It is not amiss to start a long-

range study with young personnel who should then be around for the conclusion of the project. On the other hand, some new personnel may bring fresh ideas and energies to a lagging effort.

4. Teamwork between all members of the research staff is essential: doctor, nurse, investigator, technicians, and clerks all must work together for a common goal. They must appreciate the importance of each other's efforts to the success of the whole.

5. As difficult as it may be to maintain patient interest and personnel efficiency in a long-term study, there is still the advantage of momentum which gathers slowly but increasingly, until patient cooperation becomes so routine as to be habitual. Difficulties often can be anticipated due to previous experience, and thereby avoided.

6. The gains to medical knowledge derived from the horizontal, long-term study of illness and health are only just beginning to be realized. As public health workers accumulate experience and skill in this type of study, not only should the number of such studies increase, but a maximum of information will be gained from the efforts expended.

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Annual Symposium on Venereal Diseases

The annual symposium on Recent Advances in the Study of Venereal Diseases, sponsored by the experimental therapeutics study section of the National Institutes of Health, Public Health Service, will be held at the Federal Security Building in Washington, D. C., April 30 through May 1, 1953. The symposium will take place in conjunction with the 15th annual session of the American Venereal Disease Association.

All scientific workers interested in this field, including biologists, physicians, representatives of industry, epidemiologists, and public health nurses, are invited to attend. Further information may be obtained from Dr. Frederick W. Appel, executive secretary, experimental therapeutics study section, National Institutes of Health, Bethesda 14, Md., or from Dr. John C. Hume, secretary, American Venereal Disease Association, 615 N. Wolfe Street, Baltimore 5, Md.

Child Health Day

May 1, 1953

In the quarter century since President Coolidge issued the first Child Health Day Proclamation, through new medical and scientific discoveries and extensive public health work, our country has made tremendous advances in overcoming many of the great physical hazards which used to threaten children.

In the words of President Eisenhower, "We are now striving to make equally significant progress in understanding the nature of emotional health, in order that our children may grow into mature, responsible citizens of a democracy."

We know that children who do not get the chance to develop their fullest capacities in each stage of their growth run larger risks of growing into maladjusted, unhappy, and not fully productive adults.

All along the way we see evidence that the knowledge we have about child growth is not being fully applied. We see it in mounting juvenile delinquency rates, in a fantastically large national crime bill, in mounting numbers of emotionally disturbed, mentally ill people.

There is nothing that leads us to believe that people are born juvenile delinquents or criminals. And it is in their childhood that tendencies in these directions first appear.

If, as parents, we can understand more about the growth processes of childhood, we increase the chances that our children can develop the emotional and mental strength required to live happy, useful, and satisfying lives.

OVETA CULP HOBBY
Secretary, U. S. Department of Health, Education, and Welfare

A PROCLAMATION

By the President of the United States Of America

WHEREAS the Congress, by a joint resolution of May 18, 1928 (45 Stat. 617), authorized and requested the President of the United States to issue annually a proclamation setting apart May 1 as Child Health Day; and

WHEREAS the health and wholesome development of our children are matters of the deepest concern to all Americans; and

WHEREAS the stresses and strains of our times create many problems bearing on the spiritual and emotional health of our children and are reflected notably in juvenile delinquency; and

WHEREAS we have made tremendous advances in overcoming the most severe physical hazards of childhood, and are now striving to make equally significant progress in understanding the nature of emotional health, in order that our children may grow into mature, responsible citizens of a democracy:

NOW, THEREFORE, I, DWIGHT D. EISENHOWER, President of the United States of America, do hereby designate the first day of May, 1953, as Child Health Day; and I urge all parents and young people, and all other individuals, as well as agencies and organizations interested in the well-being of children, to increase their understanding of the emotional, social, and spiritual growth of children, so as to apply this understanding in their day-to-day relations with the rising generation.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the Seal of the United States of America to be affixed.

DONE at the city of Washington this 20th day of February, in the year of our Lord nineteen hundred and fifty-three, and of the independence of the United States of America the one hundred and seventy-seventh.

DWIGHT D. EISENHOWER.

Maternal and Child Health Services

—Challenges and Aims—

By LEONA BAUMGARTNER, M.D., Ph.D.

MATERNAL and child health activities, which had their beginnings far, far back in human history, have grown through the years with the technological advances and the changing social attitudes of the times. It is no more possible to predict exactly what direction they will take in the future than it would have been 25 years ago to outline today's program. Nor is the making of specific predictions a wise procedure, for public health programs must be flexible to allow for the inevitable social and technological changes. However, it is possible and it is wise to chart some sort of course for the future. An examination of the existing situation in maternal and child health—the achievements that have been made and the problems still to be solved—provides a basis for suggestions for future action.

Maternal and Infant Mortality

The greatest and most obvious achievement has been the saving of lives of infants and mothers. Since 1915, the infant death rate among registered births in the United States has decreased 67 percent for the first year after birth, 80 percent for the second through the twelfth month, 52 percent for the first month, and 31 percent for the first day.

Fetal deaths too seem to have decreased. At least, the number of fetal deaths after 28 weeks of gestation now equals the number of neonatal deaths. Progress has also been made in saving the prematurely born, among whom the death rate has declined about 33 percent since 1915. Maternal death rates have dropped phenomenally, 85 percent since that date.

Despite these successes, fetal, neonatal, and maternal deaths year after year constitute the third or fourth largest group of deaths among the total population. Much more needs to be known about how to prevent these deaths, and much more needs to be done to put into practice what is already known. It is discouraging to see, for example, that although fewer mothers die as a result of childbearing, they still die largely of preventable causes—hemorrhage, infection, toxemia.

The infant death problems are now primarily centered around deaths at or near birth. The strong probability that certain groups in the population give rise to a large proportion of the fetal and neonatal deaths indicates these groups as one place in which activities should be concentrated. The medical factors leading to pregnancy wastage obviously need further elucidation, but it should not be forgotten that the social and economic factors also may be important.

A specific area in which additional knowl-

Dr. Baumgartner has been associated with the New York City Department of Health since 1937 and now as assistant commissioner directs its maternal, child, and school health services. In 1945 she was adviser to the French Ministry of Health, and in 1949–50 she served as associate chief of the Children's Bureau, Federal Security Agency. She is a member of the faculty of the Cornell University Medical College and of the Harvard School of Public Health.

This paper is based on material presented at the 48th annual New York State Health Conference at Lake Placid, June 1952.

edge is needed is deaths of premature infants, which constitute about two-thirds of all infant deaths. Although intensive study in the past two decades has developed methods of saving the lives of these infants and large programs for their care have been inaugurated, the lack of information on how to prevent premature labor has so far precluded the establishment of a truly preventive program.

Child Health and Rehabilitation

A second noteworthy achievement is the improved health of children after infancy. The communicable diseases are largely under control, with enormous reductions in the mortality, morbidity, and crippling they once caused. In fact, so successful have been the efforts in this direction that accidents now kill more children from 1 through 15 years of age than disease.

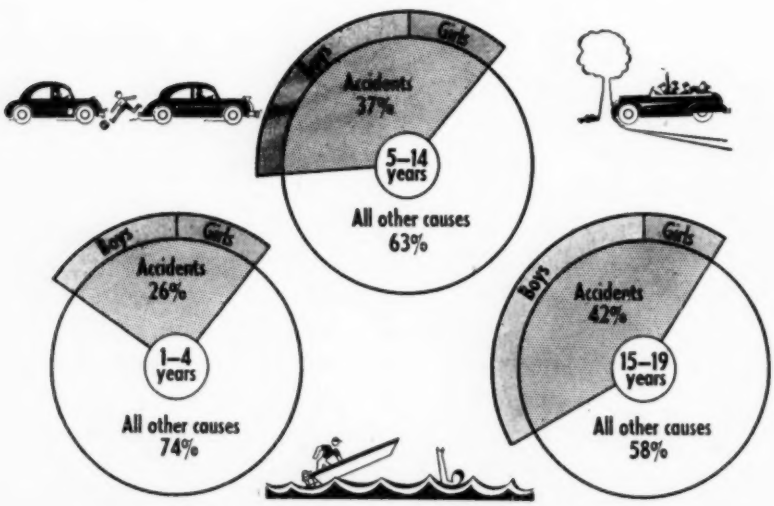
Much still remains to be done, however. Little knowledge exists, for example, as to where or how to begin to solve the accident problem. And conditions which formerly received little or no attention—such as epilepsy, congenital heart disorder, cerebral palsy—can now be attacked.

Rehabilitation of children with handicaps or chronic diseases presents many problems. The public must be willing to support the community-wide activities of case finding, diagnosis, and therapy that are essential if maximum rehabilitation is to be secured for all. These activities are usually complicated, demanding the cooperation of more than one professional group. Few communities have so organized their resources as to make them easily available on an inclusive basis. Very real experimentation must be undertaken if all children are to have the services they need for full utilization of their assets.

Further, rehabilitation activities are not always undertaken in accord with the expectation of greatest results. Public demand seems largely to have decided what was to be done. For example, few communities have attempted to establish rehabilitation of the epileptic child, even though it appears possible to improve the condition of over 80 percent of epileptic persons at relatively little cost.

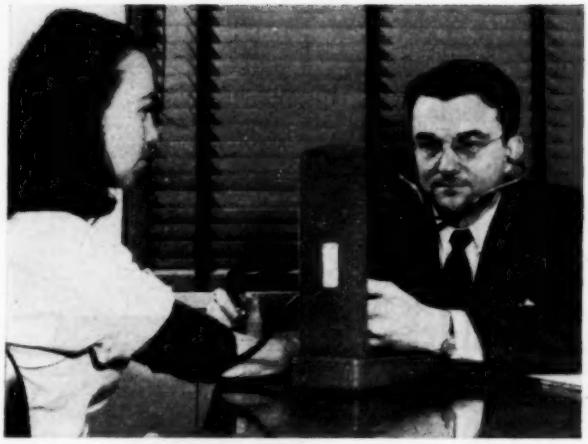
Promotion of Health

A third achievement is the enormous body of specific knowledge about the physical, mental, and emotional growth and development of children obtained through research during the past four or five decades. Research has provided many apparently unrelated facts indicating how children differ from adults and from each other. Physical growth seems to proceed in a more or less orderly fashion according to a general pattern, but within this pattern each individual proceeds at his own pace and in his own way. A pattern is evident, too, in emotional and behavior development. Permeat-



Accidents

are the greatest hazard in the lives of children. In 1948—the year on which the chart data are based—16,000 persons under 19 were killed by accidents. And the number of deaths tell only part of the story. Many more thousands of children were handicapped by accidental injury.



Good medical and nursing care throughout pregnancy—with supportive instructional and educational programs for parents before and after delivery—and the provision of good hospital facilities means the saving of thousands of babies and mothers. Achievements in reducing maternal deaths have been impressive, reflected in all three major causes—infection, toxemia, hemorrhage—a result largely of prenatal care plus hospital deliveries. Yet even now 1 out of 3 Negro babies is born with no medical attendance, and the needs today are greatest among Negro mothers and mothers living in rural areas.

ing the conclusions drawn from studies of all types is the concept of "readiness," that is, that the most successful attempts to train a child, to modify his behavior, are those which are timed to coincide with an appropriate stage of his development.

Particularly important for the public health expert are the clues as to the kinds of experience and environment which promote or retard optimal growth of the individual. These clues can be considered as hints for carefully planned epidemiological studies. The control of typhoid fever, for example, came after the lead provided by the Broad Street pump incident almost 100 years ago. Surely the environment can and should be controlled to promote the health of the child in other ways, and the process may well lead to results as spectacular as those achieved through improved environmental sanitation.

Social and Economic Factors

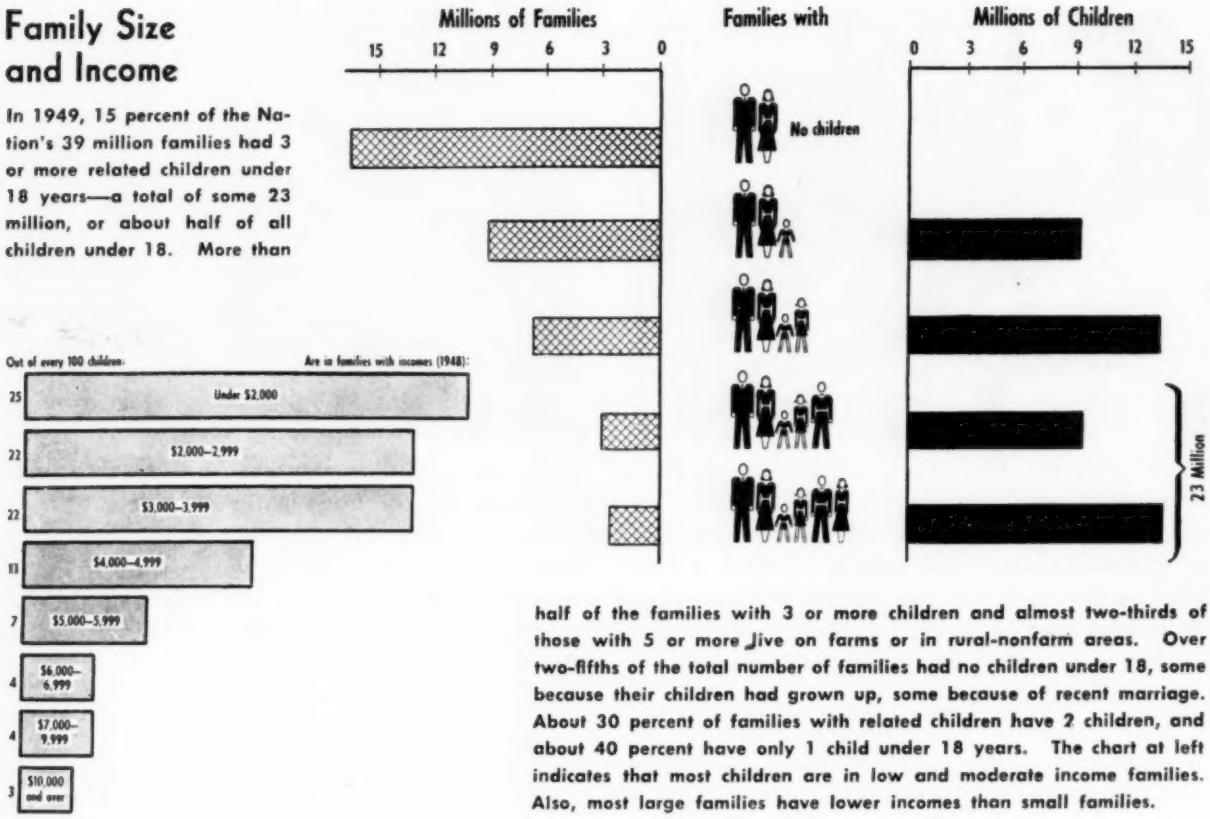
Certain economic and social factors which affect families and children should also be considered. Although these factors are not usually given attention by the medical and public health professions, they are certainly not remote from the problems confronting these professions and others interested in making the most of what medicine and public health have to offer. Five important factors deserve discussion. Figures given are derived almost entirely from the 1950 census.

Population Growth. The population is actually growing younger faster than it is growing older. In the last decade, the number of children under 5 years increased 55 percent while persons over 65 years increased only 37 percent. During the next two decades, the number of school-age children and adolescents will increase substantially. This increase in the number of children will necessitate additional child health activities just to provide the same services available today.

Younger Parents. Couples are becoming parents at a younger age today than they did in past generations. One-third of the females in 1950 were under 20 years of age at marriage, and the median age of marriage has declined ever since 1890. Parents are, however, better educated, with some 4 years more schooling than the generations born in 1890. Therefore, though they do not come to child-bearing with many of the specific skills and knowledges formerly acquired in the large families of yes-

Family Size and Income

In 1949, 15 percent of the Nation's 39 million families had 3 or more related children under 18 years—a total of some 23 million, or about half of all children under 18. More than half of the families with 3 or more children and almost two-thirds of those with 5 or more live on farms or in rural-nonfarm areas. Over two-fifths of the total number of families had no children under 18, some because their children had grown up, some because of recent marriage. About 30 percent of families with related children have 2 children, and about 40 percent have only 1 child under 18 years. The chart at left indicates that most children are in low and moderate income families. Also, most large families have lower incomes than small families.



terday, parents probably can be counted on to do more themselves for their children if shown how.

Economic Status. One-half of the children live in families with three or more children, and about one-half live in families with an income of less than $60 a week. In general, the larger the family, the smaller the income. Children are concentrated, too, in relatively few families, with 16 percent of all families caring for 61 percent of all children. Because married couples become parents at a younger age than formerly, they earn less in the years when their children are young. These facts lead to the conclusion that most of our future citizens are being brought up in families in which it usually is not possible for the family alone to provide all of the health services advised.

Family Stability. In recent years great stress has been placed on how much the health and stability of the adult depend upon the support of a stable, secure family during his early years. Bowlby (*1*) has recently reviewed evidence showing the positive relationship between early maternal care and later mental health. These figures then may be significant: One out of 8 children in the United States lives in a home that does not have 2 parents or does not live in a family at all; 1 out of 5 mothers works away from home; children born out of wedlock have increased 50 percent within the last decade, with a total of 135,000 such births occurring in 1949, 30,000 of these to girls under 17 years of age.

Chances for Survival. The chances for survival and the quantity and quality of medical and dental care received by children vary widely in different parts of the country and in different economic groups. The recent American Academy of Pediatrics study (*2*) indicates that the child's very chances for survival depend upon where he lives and who his parents are. It shows, too, that doctors, even from good medical schools, have too little opportunity to learn modern pediatrics and that there are definite needs for better distribution of health and medical services and for more and better

professional education at undergraduate and graduate levels.

These are some of the problems of maternal and child health in the United States today. Great progress has been made and significant leads have been obtained as to where to go in the future, but because of the lack of scientific knowledge in certain areas and the uncertainty as to how best to proceed in others, a great deal of uncharted sea lies ahead.

Suggestions for Action

Although the public health program for the future cannot, of course, be laid down in specific terms, the following general suggestions warrant consideration.

Research

A greatly augmented program of research into the problems of human reproduction and the growth and development—physical, mental, and emotional—of children is needed. Such a program requires the development of one or more institutes directed to the study of human beings. An institute of this type should have on its staff research persons from many fields: anatomy, obstetrics, genetics, pediatrics, statistics, embryology, physiology, chemistry, physics, and the social sciences. Among the problems lending themselves to immediate attack are the causes of death and malformation at or near birth and the accident problem. The apparent increase of mental illness and maladjustment also indicates further study is needed to verify or disprove the leads which the mental health movement is developing concerning personality growth.

Successful attacks against many of the "common" childhood diseases have cleared the way for more aggressive approaches to some of the more stubborn problems—cerebral palsy, epilepsy, rheumatic fever, congenital heart defects, poliomyelitis.

Homemaker services provided in many communities—sometimes under health department auspices—represent an important contribution to family health and child security at times when the mother is ill or temporarily disabled.

Evaluation

A second point of attack is the development of more critical evaluation studies of ongoing services. Some of the maternal and child health programs are a half century old. Are they still meeting a public health need? If not, they should be terminated. If so, methods used and results obtained should be studied to determine if these programs are as effective as they could be.

Take, for example, school health services. The one study of the past few years that probably has had the greatest influence in this field is the so-called Astoria study (*3*). It attempted essentially to answer one simple question: "How can the time now spent by teacher, doctor, and nurse in the school be spent more productively?" This question needed answering and the result undoubtedly has increased the efficiency of many school health services. But in

Nowhere in the country are there enough foster homes, residential treatment centers for emotionally disturbed children, or other facilities for specialized types of care. The lack is most acute outside metropolitan areas.

the light of the enormous sums spent in school health activities and the changes in the nature of the health problems of today's children, other questions need answering. Is any of the school health service time worth spending? Are there other more effective ways of locating children in need of medical care? And what are the really effective ways of securing care for those who need it? In short, what are the real health needs of today's school children?

To evaluate ongoing services will not be easy. Methods are often still to be developed. There is little tradition for such research, and few investigators are trained for or interested in this approach.

Service Coordination

A third approach is the coordination of current activities for the promotion of the child's health when he is well with those for his care when he is sick or chronically ill. Certainly, the practice of caring for the child in one clinic when he is well and in another when he is sick is not justified administratively nor is it satisfying to the family. All children need sound advice about health care and growth and development as well as specialized care for their particular ailments.

Many of the current child health problems seem to require a team approach—for example, the rehabilitation of the child with cerebral palsy, a severe hearing loss, or rheumatic fever. Isn't there some way of promoting a closer working relationship between public health personnel and the general practitioner, without whom many of the past achievements could not have been made? Wouldn't it be possible to work out an agreement whereby the general practitioner's patients could be helped by the public health nurse, nutritionist, and similar persons? Certainly, experiments can be made to determine the feasibility of providing, in one geographic location and with as far as practical the same staff, all the health services a particular child needs.

Social Science Approaches

The fourth approach should be an attempt to use more effectively some of the findings of social scientists. They stress, for example, the use of community groups having a common interest in the solving of problems which demand changes in behavior. The therapeutic value of groups such as Alcoholics Anonymous or parents of children with cerebral palsy or diabetes has been demonstrated. Why shouldn't the value of work with groups of parents of 6-month-old or 2-year-old children be tested? Attempts in this direction have been made and seem to confirm the opinion that this type of group approach has great potentialities.

Failure to focus on the whole family in a human kind of way has characterized many of our efforts in the past. The effective care of the child is a complicated process involving, particularly in early years, all the family and more than good physical care. For example, maternity care has often been interpreted as the maintenance of a complicated piece of machinery located in the female pelvis. Certainly this approach has saved thousands of lives. But hasn't something needlessly been lost in the meantime? The birth of a child is a natural function and involves all the members of the family. The recent swing to a more human approach to the expectant mother and the newborn infant in this country should be a matter of rejoicing among all public health workers. A better foundation for family life is thus being built, with no loss in effectiveness of lifesaving measures. Years ago that remarkable experiment at the Peckham Health

Well child care provides an opportunity to promote the emotional as well as the physical health of children. But too few children get health supervision when they are not sick. Children living in the South and in isolated counties get far less care from physicians in private practice than children elsewhere. Children living in metropolitan counties receive one-third of their care from pediatricians and other specialists, but children in isolated counties get very little service of this kind. Less than one-tenth of the well child care is given at clinics, and most clinics are held in metropolitan counties.

Center demonstrated the value of bringing the whole family in on health problems of the individual in the family (*4*).

Possibilities for Progress

Finally, new ways of bringing to more people the benefits of medicine and public health need to be developed. Part of the picture, as previously pointed out, involves economic problems, but there are other problems too, some relatively simple and solvable today.

For example, why is there such a wide variation in the maternal and neonatal mortality rates and in quantity and quality of maternal and infant care in the same area? Recent studies in one large urban area where well-trained physicians and nurses are found in all hospitals show startling differences in practices (*5*, *6*). With hemorrhage a leading cause of maternal death, is it really interference with the practice of medicine to insist, for example, that all hospitals have blood readily available in the delivery room? Is it too much to require that anesthesia in the delivery room or gavage feeding in the premature nursery be given by persons who have been especially taught the techniques? Hospitals were long ago compelled to eliminate cross connections in plumbing and to drop silver nitrate in the eyes of newborn babies.

Why, despite all the evidence indicating the value of maternal care in early infancy and its relation to mental health in later life, isn't something more concrete done to provide continuity of maternal care for infants? Gains in emotional stability may be made by keeping children in their own homes instead of placing them in institutions. Much greater efforts should be made in this direction. Consider, for example, the commonly accepted practice of private and public agencies of paying more per day for the care of a child in an institution than in a foster boarding home, or the reluctance of these agencies to pay for homemakers or housekeepers to enable parents to keep children in their own homes. Is it practical not to tackle more effectively also the problem of care for the 135,000 children born annually to unwed mothers?

Individual Action

These are but a few examples of approaches to existing problems. Many of the problems await concerted action over a long period of time, and many require action which the individual health worker cannot initiate by himself. But each worker, as he performs his day-to-day tasks, can initiate action directed toward the goals suggested above.

He can, for example, reexamine his current activities to see if he is directing his major efforts toward those which apparently add to the physical, mental, and social well-being of those he serves. He can attempt to look at his daily job from a "new approach," exploring the possibilities of trying out a better way of doing the job or learning what persons of allied professions have to offer. He can add the human touch to his relations with those he serves. He can remain flexible, for the future of child health and public health lies in the ability of its

personnel to remain flexible and creative so that they can adapt new knowledge to old problems.

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Charts with this paper are adapted from: Children and Youth at Midcentury—a chart book, issued by the Midcentury White House Conference on Children and Youth and published and distributed by Health Publications Institute, Inc., Raleigh, N. C.

Children's Bureau Reports 1951 Adoptions

Nearly half the children adopted in 1951 by persons not related to them were placed in adoptive homes without the safeguards that both the children and parents should have, according to the Children's Bureau, U. S. Department of Health, Education, and Welfare. Forty-eight percent of children adopted by nonrelatives were placed into the adoptive home independently of a social agency.

The Children's Bureau report on adoptions in 1951 was prepared from data furnished by State public welfare agencies, on the basis of which the Bureau estimates that probably 80,000 adoption petitions were filed during the year. This is a 60-percent increase over adoption petitions filed in 1944.

The report attributes the increase in adoptions to the large number of homes broken by death, divorce, or desertion during and following World War II, and to the increase in the number of children born out of wedlock.

The average age of the children for whom adoption petitions were filed was 3.3 years in the 25 States reporting substantially complete information for 1951. Two-fifths of the children were under 2 years of age at the time the adoption petition was filed.

In independent placements, more than half of the children were under 1 month of age at the time of placement. This means that many of these children were placed either directly from the hospital or shortly thereafter. Only 11 percent of the children placed by agencies were under 1 month.

In the 25 States reporting complete information on adoption petitions, the number of adoptive children was almost equally divided between those born out of wedlock and those born in wedlock. Nonrelated persons filed adoption petitions for 69 percent of the adoptive children born out of wedlock but only 25 percent of those born in wedlock.

Cardiovascular Syphilis In a General Medical Clinic

By S. P. Lucia, M.D., Vernon C. Harp, Jr., M.D., and M. L. Hunt, M.P.H.

Cardiovascular involvement is one of the more important manifestations of late syphilis, producing marked physical incapacity and a high accidental mortality. Diagnosis is often difficult, which is important, because the type and amount of therapy are dependent upon the degree of cardiovascular involvement.

The study here reported was undertaken to determine the incidence of cardiovascular syphilis in an outpatient department of a general medical clinic, the types of lesions most commonly encountered, and the age groups most frequently affected.

The group studied was made up of 830 patients referred to the Luetic Cardiovascular Clinic by the Clinic of Dermatology and Syphilology, University of California Medical Center. During the 12-year period, 1939–51, 2,273 of the total of 274,782 patients seen at the medical center were referred to the Clinic of Dermatology and Syphilology because they had either a history or serologic tests indicative of syphilis. The 830 patients in this study were in turn referred to the Luetic Cardiovascular Clinic, where 354 were found to have cardiovascular syphilis and 187 were found to have other cardiovascular disease (table 1).

Most of the patients with cardiovascular syphilis (310, or 87.7 percent) were over 40 years old; 213 were in the age group 41–60; 97 were over 61; only 44 were aged 21–40 (table 2). Aneurysm was the most frequently observed lesion in the older age groups, 48.4 and 67 percent, respectively; simple aortitis was found in 47.7 percent of the younger group. It is probable that in the older age groups the syphilitic process has been present longer, thus increasing the possibility of involvement of the heart as well as other organs.

Of the 354 patients with cardiovascular syphilis, 91 (25.7 percent) had simple aortitis; 180 (50.8 percent), aneurysms; 42 (11.9 percent), aortic insufficiency; and 41 (11.6 percent), a combination of aneurysm and aortic insufficiency (table 3).

Dr. Lucia is professor of medicine and chairman of the subdepartment of preventive medicine, Dr. Harp is clinical assistant in medicine, and Miss Hunt is a graduate research immunologist at the University of California School of Medicine, San Francisco.

Diagnosis

In the Luetic Cardiovascular Clinic, the cardiovascular history, results of the physical examination, and conclusions drawn from a fluoroscopic examination, which represented an agreement between the various members of the examining staff, were recorded on a standard form. Examinations of the patients were made at intervals of 3, 6, or 12 months as the situation required. These examinations served as a check on the previous findings and also permitted detection of any progress in the disease process. From the data obtained, the diagnosis of cardiovascular disease was made;

Table 1. Incidence of cardiovascular syphilis in 2,273 patients referred to the Clinic of Dermatology and Syphilology and in 830 patients further referred to the Luetic Cardiovascular Clinic

Type of cardiovascular disease	Patients referred to Luetic Cardiovascular Clinic		Percent of 2,273 patients referred to Dermatology and Syphilology Clinic
	Number	Percent	
Total	830	100	36.5
Syphilitic cardiovascular disease	354	42.7	15.6
"Other" cardiovascular diseases [1]	187	22.5	8.3
No evidence of cardiovascular disease	289	34.8	[2]

[1] Rheumatic heart disease, 7 cases; congenital heart disease, 1 case; arteriosclerosis and hypertension.

[2] This group represents only that portion of the 830 individuals originally suspected of having involvement of the heart and therefore cannot be statistically evaluated in relation to the total 2,273 patients.

Table 2. Age distribution of 643 seropositive patients, by presence or absence of syphilitic cardiovascular disease

Diagnosis	Total	Age groups				
		Under 40	41–50	51–60	61–70	Over 70
Total	643	184	198	158	87	16
Cardiovascular syphilis	354	44	107	106	81	16
No evidence of syphilitic cardiovascular disease	289	140	91	52	6	0

opinion as to its activity, severity, and progression was given; and a plan of therapy was recommended.

Recognition of syphilis of the cardiovascular system depends upon the detection of weakness in the walls of the aorta. Chest pain, cough, dyspnea, or hoarseness, a broadened area of dullness at the base of the heart, unilateral pulse weakness, and a tambour quality of the aortic second sound all suggest syphilitic cardiovascular disease. An aortic diastolic murmur is of positive diagnostic significance since it is usually associated with a widened pulse pressure and it may be accompanied by the peripheral signs of aortic insufficiency. Although aortic insufficiency may follow advanced arteriosclerosis, the peripheral signs of aortic insufficiency, in such instances, may be minor or absent.

A fluoroscopic examination is the most reliable method of detecting cardiovascular syphilis in its early stages, and a series of fluoroscopic examinations provides the best indication of the progression and severity of the disease. The earliest positive sign of aortitis is a definite broadening of the ascending aorta. By serial examinations, progressive enlargement, sacculation, and fusiform dilatation of the aorta are revealed. Fusiform dilatations of the ascending aorta are not invariably due to syphilis, but are more frequent when this disease complicates the usual changes caused by arteriosclerosis and hypertension. Fusiform aneurysms are usually, but not necessarily, due to syphilis, while saccular aneurysms are almost always the result of syphilitic aortitis.

In our experience, calcification in the wall of the ascending aorta is most often consequent to syphilitic invasion; in the wall of the abdominal aorta it is usually the result of arteriosclerosis, and in the thoracic aorta or aortic knob it may be due to arteriosclerosis alone. Calcification occurring exclusively in the ascending aorta indicates that the sclerotic changes are more marked because of the antecedent syphilitic inflammation.

Age Groups Affected

In table 2 the age distribution of 354 individuals who were diagnosed as having cardiovascular syphilis is compared with the age distribution of 289 individuals in whom no evi-

Table 3. Incidence of syphilitic cardiovascular lesions, by age

Lesion	Total		Age (years)						
	Number	Percent	21–30	31–40	41–50	51–60	61–70	71–80	81+
Total	354	100.0	7	37	107	106	81	14	2
Simple aortitis [1]	91	25.7	5	16	40	22	7	1	0
Aneurysm	180	50.8	0	12	43	60	53	11	1
Aortic insufficiency	42	11.9	2	7	14	13	4	1	1
Aneurysm and aortic insufficiency	41	11.6	0	2	10	11	17	1	0

[1] Simple aortitis refers to a broadened aorta, usually associated with a systolic murmur and a hollow aortic second sound, and often with symptoms due to these changes. It specifically excludes patients with aneurysms or aortic valve insufficiency.

Table 4. Incidence of syphilitic cardiovascular lesions, according to character of the lesion

Lesion	Number	Age (years)					
		21–40		41–60		61–80+	
		Number	Percent	Number	Percent	Number	Percent
Total	354	44	100. 0	213	100. 0	97	100. 0
Simple aortitis	91	21	47. 7	62	29. 1	8	8. 3
Aneurysm	180	12	27. 3	103	48. 4	65	67. 0
Aortic insufficiency	42	9	20. 4	27	12. 7	6	6. 2
Aneurysm and aortic insufficiency	41	2	4. 6	21	9. 8	18	18. 5

dence of cardiovascular disease was found. The incidence of syphilitic cardiovascular lesions, by age, is shown in table 3.

Incidence of Lesions

The lesions which were considered to be the result of syphilitic invasion of the cardiovascular system were simple aortitis, aneurysms, aortic insufficiency, and aneurysms and aortic insufficiency combined.

In the group of patients with simple aortitis due to syphilis associated symptoms such as aortic systolic murmurs or a hollow quality to the aortic second sound were also present. There were no instances of aortic insufficiency, aneurysm, hypertension, or gross arteriosclerosis of the aorta in this group. Aneurysms were present in 221 (62.4 percent) of the patients, and in 41 of these the aneurysm was accompanied by aortic insufficiency. On auscultation, insufficiency of the aortic valve was revealed in 83 (23.4 percent) of the patients, and in 42 of these there was no fluoroscopic evidence of an aneurysmal dilatation of the aorta.

Types of Lesions

In table 4 the data are arranged by age groups and according to the character of the lesion. In the light of the present day concept of the pathological changes in syphilitic aortitis, the first assault on the aorta would lead to a simple inflammatory process with broadening of the aorta and advance to the production of aneurysms with or without involvement of the aortic valve itself. Accordingly, a greater incidence of simple aortitis would be expected in the young subject suffering from syphilitic cardiovascular disease and with increasing years an augmented incidence of aneurysm. A comparison of the incidence of simple aortitis in three age groups (table 4) reveals a statistically significant decrease in the occurrence of simple aortitis with advancing age and a statistically significant increase in the incidence of aneurysms. Aortic insufficiency occurred according to the statistically expected frequencies in each of the three age groups studied.

Table 5. Aneurysms of the aorta, by site of the lesion

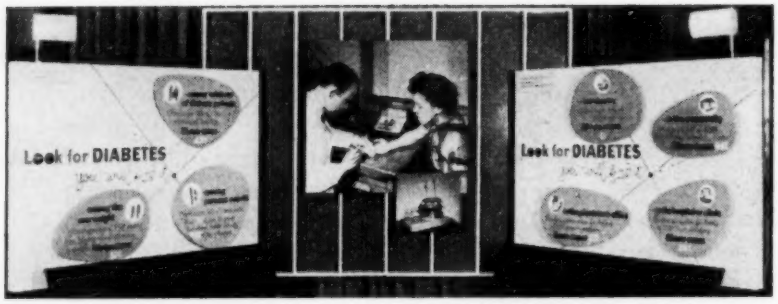
Location of aneurysm	Number	Percent
Total	254	100. 0
Ascending aorta	211	83. 1
Transverse aorta	14	5. 5
Descending aorta	29	11. 4

Of the 221 patients with aneurysms due to cardiovascular syphilis, several had more than one aneurysm—a total of 254 (table 5). Most of the aneurysms (211) were in the ascending aorta, 29 were in the descending aorta, and 14 in the transverse aorta. Of the patients who had aneurysms of the transverse or descending aorta without involvement of the ascending aorta, 4 were in the age group 41–60, and 6 were in the age group 61–81+.

Conclusions

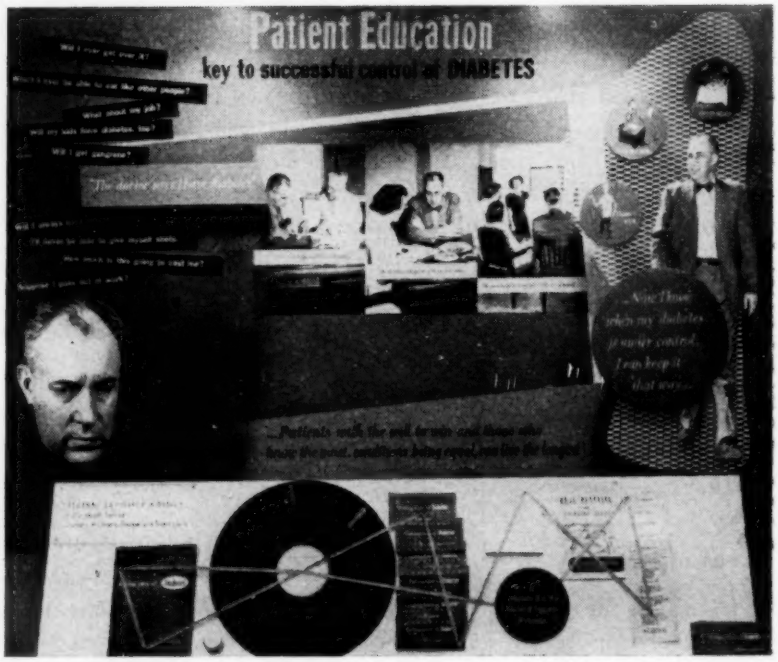
In the diagnosis of cardiovascular syphilis it is important (*a*) to make a systematic evaluation of the symptoms and physical signs suggestive of the disease, (*b*) to subject the patient to serial fluoroscopic examinations to determine the presence or absence of aortitis, and (*c*) if lesions are detected, to assess the rate of progression of the disease. Data obtained from such examinations are of value in deciding whether further therapy might introduce a hazard, especially in the advanced age group where hypertension, arteriosclerosis, and other evidences of degeneration of the cardiovascular system may coexist.

Diabetes Exhibits Available to Professional Groups



"Look for diabetes," is the theme of the Public Health Service exhibit (left) displayed at the 1952 annual meetings of the American Medical Association and District of Columbia Medical Society. The exhibit is 12 feet wide and 5 feet deep and weighs 250 pounds.

"Patient education, key to successful control of diabetes," (right), a Public Health Service exhibit, depicts control measures for diabetes. The lower panel displays some components of a kit of filmstrips, records, posters, and pamphlets which may be used by clinics, professional personnel, and public health workers for teaching diabetic patients. (Inquiries on how to obtain the kit separately from the exhibit should be addressed to your State Health department.) The exhibit was first shown at the New England Health Institute, Storrs, Conn., and then at the annual meeting of the American Diabetic Association in Minneapolis in 1952. The exhibit is 6 feet wide and weighs 250 pounds.



Official agencies and voluntary organizations may borrow these exhibits for showings to professional audiences. The borrower, however, must pay the cost of transportation and insurance, both ways. Inquiries concerning the availability of the exhibits should be addressed to the Division of Chronic Disease and Tuberculosis, Public Health Service, Washington 25, D. C.

Public Health in Indonesia

By E. ROSS JENNEY, M.D., M.P.H.

IN THE NEW NATION of Indonesia, the principles of sound public health practice are being cross-examined and evaluated in relation to some of the most involved problems to be considered by one nation at one time. It is fascinating to observe, for some astute minds are being challenged to find a practical answer to what becomes, as one lives with it, a complex of conundrums. Most of the Indonesian officials who are responsible for making decisions have a local background plus an education in Western medicine and public health methods. This fortunate circumstance insures a realistic compromise with nicely budgeted programs nurtured in lands of economic affluence, but at the same time provides a dissatisfaction with the slow development of preventive medicine in the East.

A Nation of Islands

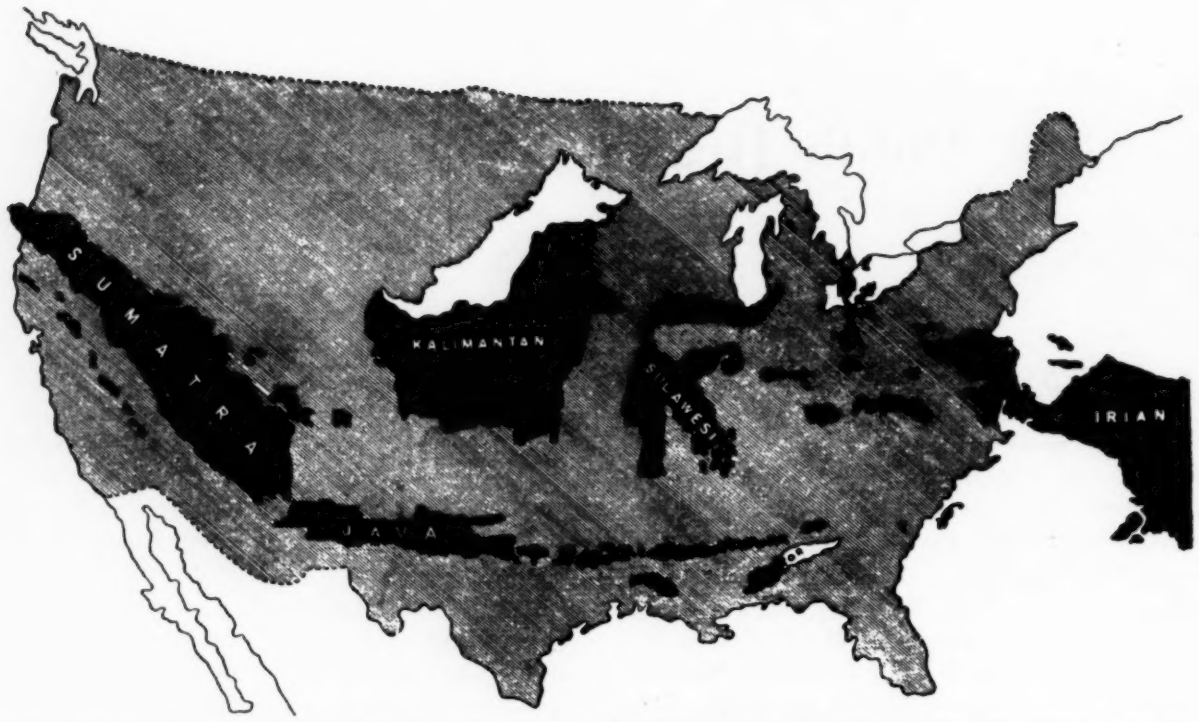
Although the Republic of Indonesia is but one of several nations born from the partial collapse of colonialism in Asia, its problems and advantages are such as to place it in a rather unique position in regard to future planning, particularly in public health. The nation holds sovereignty over the former Netherlands East Indies, comprising Sumatra, Java, Borneo, Celebes, some 25 smaller satellites which except for Bali and Ambon are scarcely known to the world by name, and 13,000 interspersed small islands of which 2,600 are populated. Jurisdiction of the western half of New Guinea (Irian) is in dispute. Indonesia is, then, a nation composed solely of the world's largest archipelago with a land area of 750,000 square miles stretching across an equatorial area of 3,500 by 1,500 miles. If the northern tip of Sumatra were at New York, New Guinea would lie across North Africa.

Population Characteristics

Living on these islands is an unevenly distributed population of about 75 million. Java, with 52 million people and 51,030 square miles, has 70 percent of the population and only 7 percent of the land area. This is equivalent to one-third of the population of the United States living in the State of Florida. Density of population in Java averages over 1,000 per square mile. Since much of the island contains the sloping terrain of 50 volcanoes, the population density per square mile in some areas is approximately 1,700—the greatest rural population density in the world. In contrast to this, Borneo, the third largest island in the world, has a population density of about 14 per square mile.

The inhabitants of Indonesia are of Malay descent. The Chinese merchant is everywhere and with the Europeans, Arabs, and Indians forms a minority population of perhaps 2,500,000. Although many languages are used, comprising over 200 dialects, the language is being unified by promulgating "Bahasa Indonesia,"

Dr. Jenney has returned to Washington, D. C., from a 2½-year assignment as chief of the public health division of the Technical Cooperation Administration Mission to Indonesia. Before entering the Public Health Service as a commissioned officer in 1949, he served as chief of public health of military government in Bavaria (1946–48) and chief of public health, Allied Mission to Norway (1944–45). His earlier career included an assignment to Labrador with Sir Wilfred Grenfell's mission.



Indonesia superimposed on the United States. The Republic of Indonesia, lying between the land masses of Asia and Australia, is a nation composed solely of the world's largest archipelago stretching across an equatorial area of 3,500 by 1,500 miles.

which is similar to the variety of Malay spoken in the Riouw Archipelago near Singapore. The religions of the Indonesians are derived from the Hindu kingdoms of the seventh and eighth centuries and the Mohammedan infusion in the thirteenth and fourteenth centuries. Hinduism survives in Bali, but over 90 percent of the Indonesians are Moslem. The areas not strongly Moslem at the arrival of the Europeans have been more susceptible to conversion to Christianity, notably the island of Ambon, the northern tip of Celebes, and the area around Lake Toba and Medan in Sumatra.

Climate

Although the climate of the river bottom lands is tropical in every sense, the mountains, which rise to peaks commonly 10 to 12 thousand feet, provide a range of climate that is quite agreeable. The coastal cities of Java have a climate comparable to our own eastern cities in summer, and a blanket at nighttime is usually needed in the mountain towns.

Except for the more arid Lesser Sunda Islands, the entire archipelago is carpeted in tropical vegetation, from the coastal swamp lands to the slopes of the volcanoes. In Java, this has given way to agriculture, chiefly in the form of the famous terracing for the rice paddies, and to the agricultural plantations of the Dutch.

Exports

Although the 3½ years of Japanese occupation, subsequent military actions, and other factors have compromised the export situation, before World War II Indonesia provided 37 percent of the total world's export of rubber, 19 percent of tea, 27 percent of copra, 24 percent of palm oil, 91 percent of quinine, 86 percent of pepper, 72 percent of kapok, 25 percent of hard cordage fibers, 3 percent of petroleum, 17 percent of tin, 5 percent of sugar, and 4 percent of coffee. Of the total export value, 30 percent was in rubber, 21 percent in petroleum, 13 percent in copra and palm oil, 11 percent in tin, and the balance in sugar, tea, and other products.

The exports in 1950 in order of importance

were rubber, petroleum, tin ore, copra, tobacco, tea, and palm oil. The chief consumer countries were the Netherlands, the United States, Singapore, the United Kingdom, Germany, Japan, and Australia.

In contrast to its extraordinary beauty and its potential wealth, Indonesia carries a heavy burden of poverty, ignorance, and disease. The individual subsistence level farmer dominates the agricultural pattern, and the rapid increase in population implies a questionable future for Java. Literacy is estimated at 17 percent. Since this is largely in the urban areas, the rural population of 65 million is nearly illiterate.

The Health of 75 Million

Studies predicated upon limited surveys indicate a birth rate of 28 and a death rate of 20 to 25 per 1,000 a year. Maternal mortality is estimated to be in the neighborhood of 16 per 1,000 live births, and infant mortality varies from 115 to 300 per 1,000 live births a year but has been shown to be higher in some areas. Life expectancy scarcely can be guessed, but the figure of 32 years is commonly used.

Javanese returning from market. Human excreta is disposed of almost exclusively in the sluggish canal ("kali") on the right, which is also used for bathing and for washing vegetables and clothes. Indonesians, who have a highly developed sense of personal cleanliness, have been slow to appreciate the values of modern sanitation.

Associated with the Medical School (above) of the University of Indonesia in Djakarta (Java) is a modern 1,200-bed general hospital. At this school, one of the three medical schools in Indonesia, 25 students were graduated in 1951.

Malaria

Indonesia is one of the world's great endemic areas of malaria. Carried by both fresh and salt water *Anopheles* which breed throughout the year, the disease is common almost everywhere in the archipelago. In coastal areas, where incidence is apt to be high, the spleen index is frequently 90 percent or more. The incidence by attacks for each year, as in most of Southeast Asia, is estimated at 30 percent, and the annual mortality ranges from 20 to 40 per 1,000 in endemic areas of high incidence. In severe epidemics, records have shown 40 percent of the afflicted population dying from malaria within a year. Malaria certainly causes more deaths in Indonesia than any other disease and has a profound effect upon the economy of the country and upon mortality from diseases with which it occurs concurrently. Tertian and estivo-autumnal forms of the disease are in about equal proportions, with scattered areas of quartan forms in the Lesser Sunda Islands.

Tuberculosis

As in most tropical areas, tuberculosis is impossible to evaluate in statistical terms. There are at least half a million open cases, and it is known to constitute a major cause of death, perhaps 8 to 10 percent of the total. Limited surveys have shown the mortality rate to be 189 per 100,000 a year, but it is probably much

higher. There can be no doubt that a postwar increase in the disease occurred and that it will be many years before a quantitatively adequate approach to the problem can be devised. In the meantime, living conditions are contributing to the spread of tuberculosis, and it will probably emerge as the most difficult of all health problems.

Other Diseases

Typhoid fever, the paratyphoids, both bacillary and amebic dysenteries and the common diarrheas are extremely widespread throughout Indonesia. War damage and the increase in population contribute to their spread in rural areas, and recent overcrowding severely taxes urban sanitary facilities.

Yaws is found in proportions ranging from 5 percent to 90 percent and averages perhaps 15 percent; it is probable that there are 12 or 15 million cases. It is generally conceded that half of the world's cases of yaws are in Indonesia.

Filariasis has a variable incidence in different islands. It is particularly prevalent on the east coast of Sumatra, in Banka, in the Moluccas, and in the two southern peninsulas of Celebes.

Tropical typhus occurs in most of the islands except Java, and dengue is everywhere. Pneumonia is a common cause of death, particularly in infants. There is an occasional threat of cholera, but the disease must be considered eradicated. After very extensive control measures, plague now appears only sporadically, chiefly in mountain areas of Java. However, as recently as the first half of 1951, there were 2,861 cases and 1,185 deaths reported in Java and Madura. Smallpox has been nearly eradicated at various times but occurs at intervals by reintroduction. Following World War II there were widespread epidemics because the previous extensive vaccination program lapsed during the Japanese occupation. A recent introduction of smallpox from Singapore was traced from Sumatra to Java where it rose to epidemic proportions in West Java in 1948 and resulted in a severe epidemic in 1950 and 1951 in Surabaja. After spreading through eastern Java and Bali and reaching nearby Madura, it was carried by the Madurese fishermen to west and south Borneo and from there to the Gulf of Bone in Celebes and to Ambon.

Leprosy, trachoma, and leptospirosis are all widespread, with an incidence corresponding to that found in most tropical countries. There are about 70,000 lepers in the nation. Rabies is common among dogs, in West Java particularly. Tetanus neonatorum is a frequent cause of infant mortality, especially in Celebes. Scabies is almost universal with frequent secondary infections. Tropical ulcers, tinea infections, and other tropical skin diseases are everywhere. Hookworm is widespread in the population, with perhaps a 50-percent prevalence in much of Java and 80 percent in the northern and southern peninsulas of Celebes. Ascaris infestation is almost universal, and other forms of helminthiasis abound. The rural prevalence of venereal disease is unknown, but there are indications that it affects not less than 10 percent to 20 percent of the population in urban areas.

Indonesia shares with the rest of Asia the unexplained freedom from yellow fever in the presence of the mosquito vector. Leishmaniasis is rarely encountered and is always imported, and schistosomiasis has been found only in a limited area of central Celebes at the base of the northern peninsula.

Malnutrition

The actual degree of malnutrition is relative matter in the tropics and is difficult to evaluate. Indications are that most of the inhabitants are living in a borderline state of malnutrition in regard to vitamins, protein, calcium, cholesterol, and iodine. Clinical cases of nutritional deficiency are observed to some degree everywhere and in a high degree in certain areas, particularly in conjunction with postmalarial anemia. Endemic goiter is frequently seen in the mountains of Sumatra, Celebes, Bali, and elsewhere, and edema caused by lack of protein is not uncommon.

Of the vitamin deficiencies, the lack of vitamin A is by far the most predominant, contributing to much eye infection and subsequent blindness. Kidney and bladder stones, possibly connected with a lack of vitamin A, are common, and in some hospitals 10 percent of all pediatric surgery is for this condition.

Medical Facilities and Personnel

The Ministry of Health of the Republic of Indonesia is responsible for almost all medical and public health services in the nation. It is a highly centralized system working toward decentralization. It has assumed the functions of the former Netherlands East Indies Public Health Services, operates and staffs government hospitals and polyclinics, and controls most of the distribution of medical supplies and equipment. The present organization of the ministry dates from August 17, 1950. Earlier, there was a separate ministry of health at Djogjakarta.

Before the war, there were 207 general hospitals in Java and Madura, with a capacity of 19,022 beds (0.39 beds per 1,000 population). In addition, there were privately owned hospitals, missionary hospitals, and the medical facilities of plantations, petroleum companies, and so forth.

The Ministry of Health reports that in all of Indonesia there are now 600 general hospitals with 55,000 beds and 78 special hospitals and sanatoriums with 11,204 beds. The government owns about 35 percent of all hospital space, but a large part of the remainder is under some form of subsidy.

In 1942, there were 1,700 polyclinics operated by the Netherlands East Indies Public Health Service of which only 500 were in continuous daily use. Only the most important of these clinics were visited daily by a physician. The remainder were usually staffed by specially trained male nurses known as mantris, who frequently were not able to visit each clinic more than once a week. A polyclinic is usually in a small building in the jungle or a room in some community building. Industrial companies, plantations, and estates were charged by law with the care of their laborers. Hence, a close collaboration now exists between the Ministry of Health and these companies.

Before the war the number of physicians was 1,600. Owing to the exodus of many Dutch physicians, there are now fewer than 1,400 physicians in Indonesia, and perhaps no more than 1,000 are actually practicing medicine. This gives a ratio of 1 practicing physician to 75,000 population, which is undoubtedly one of the lowest in the civilized world. Because of the urban concentration of physicians, the rural ratio is often one physician to several hundred thousand population. No less than 20 percent of the nation's physicians are in Djakarta. An offer of government contract service has recently brought a number of European doctors to Indonesia.

Market scene in Bali. The island lies east of Java in the Lesser Sunda Islands, which include Lombok, Sumba, Sumbawa, Flores, and Timor. Population density on Bali averages about 600 per square mile.

Medical Schools

There are three medical schools in Indonesia. The medical school at Djakarta was founded in 1851. The medical school at Surabaja

was founded in 1913. The medical school at Djogjakarta was founded in 1945. The first two are definitely class A institutions by European standards except for the unfortunate loss of faculty and some destruction and looting of equipment during the Japanese occupation. The institution at Djogjakarta is functioning under handicaps but is not compromising its objective of high standards. A fourth medical school is being planned under local auspices at Medan, Sumatra. There are indications that the medical courses may be reduced from 7 to 5 years.

The combined output in 1951 of the 3 existing medical schools was 25 graduates from Djakarta, 3 from Surabaja, and 2 from Djogjakarta, or 30 in all. There is a low government stipend for some students who must then enter government service for a stipulated period. Since many graduates are destined for private practice, and since the government service has little to offer in remuneration, it is difficult to obtain medical personnel for government service. A physician beginning in government service has a starting salary of 280 rupiah ($25) a month, about the equivalent of the wages of a railway porter. Even a poor physician can make 10 times that much in private practice. Combining private practice with government service is therefore inevitable for the majority of physicians. This is facilitated by the fact that official government working hours are from 7 a. m. to 2 p. m.

The famous Eijkman Institute and the associated Institutes of Nutrition and Malaria are directly under the Ministry of Health. It was at the Eijkman Institute that vitamin B_1 was first isolated in its chemically pure form by Jansen and Donath in 1926. The Institute of Malaria has two branches with good laboratories in Surabaja and Makassar and a third branch under way in Djogjakarta.

Situated in most of the larger cities are central diagnostic laboratories which operate as branches of the Central Laboratory of Djakarta. Vaccines, including the "living" plague vaccine and the famous dried smallpox vaccine of Otten, are produced at the Pasteur Institute in Bandung. All the medical educational institutions are under the Ministry of Education.

Public Health Organization

The Netherlands East Indies Public Health Service supplanted the former Civil Medical Service in 1925 and was a full-time central public health service with headquarters at Batavia (now Djakarta). Its program was a centralized one until 1934 when provincial health services were organized in Java, Sumatra, and the East Archipelago, under central supervision. By 1937, local health departments had charge of soil sanitation, water supply, sewerage, hospital care, and dispensaries. Decentralization was completed by 1938, and general public health work was also transferred to local authorities and municipalities, an organizational structure which now continues under the central authority of the Ministry of Health.

A large proportion of medical personnel are now employed by the Ministry of Health and the provincial health organizations. In 1937, 651 of 1,135 practicing physicians were employed by the government, and in 1938, 527 of 1,247 physicians.

At the end of 1951, 614 of the slightly more than 1,000 physicians practicing in Indonesia were in government service. The roster of medical and associated medical personnel included:

Physicians	614
Pharmacists	6
Assistant pharmacists	600
Dentists	34
Sanitary engineers	3
Chemists	3
Sanitary inspectors	10
Analysts	30
Nurses	3,500
Midwives	1,466
Malaria mantris	296
Laboratory technicians	226
Plague mantris and technicians	407
Vaccinator mantris	600
Health education mantris	300
Home visitors	12

The budget of the Ministry of Health, which covers most of the medical service and all of the public health service, was 5.2 percent of the national budget for 1951 or 6 rupiah per capita per annum, the equivalent of approximately 50 cents.

In general, it can be seen that the public

health problems are widespread and profound, complicated by great distances, poor communications, illiteracy, and poverty. The population, thinly spread in most areas but highly concentrated in Java, is increasing so rapidly that efforts to improve the standard of living scarcely can keep abreast of the increment. Sometimes the situation appears hopeless, but the potential wealth and delightful terrain of Indonesia plus the willingness and natural desire for a democratic way of life and general temperament of the Indonesians themselves combine to present an inspiring challenge to make these thousands of islands one of the bright spots in this world. The exasperating contrast between what is and what could be—the obvious unreasonableness of it—places a tremendous burden of proof upon all the precepts of planning for human welfare.

NOTE. The photographs and map are supplied through the courtesy of the information division of the Embassy of Indonesia.

Heart Disease Screening in X-ray Surveys

Although chest X-ray surveys search primarily for undiscovered tuberculosis, any suspicious shadow on the photofluorogram deserves special attention, and film readers will uncover many unsuspected neoplasms and cardiovascular abnormalities. Through the years, it has been found that a significant number of persons with nontuberculous chest disease can be discovered in this way—an "extra dividend" of the tuberculosis survey.

The Lung Cancer Committee of the American Cancer Society, at its September 1952 conference in New Hampshire, recommended that the Society cooperate with other voluntary and official agencies in the conduct of X-ray screening programs.

The American Heart Association, the National Tuberculosis Association, and the Public Health Service urge also that every chest X-ray campaign be used to its full potential for heart disease case finding. To this end, the three organizations recently issued the following public statement:

"1. Local voluntary and official health and medical agencies should be urged to accept the responsibility for setting up procedures for referral for diagnostic follow-up and supervision of those cases of suspected heart disease that are found incidentally in the course of reading mass chest X-ray survey films for tuberculosis by those qualified to read films for tuberculosis but without particular qualifications for reading for abnormal heart shadows.

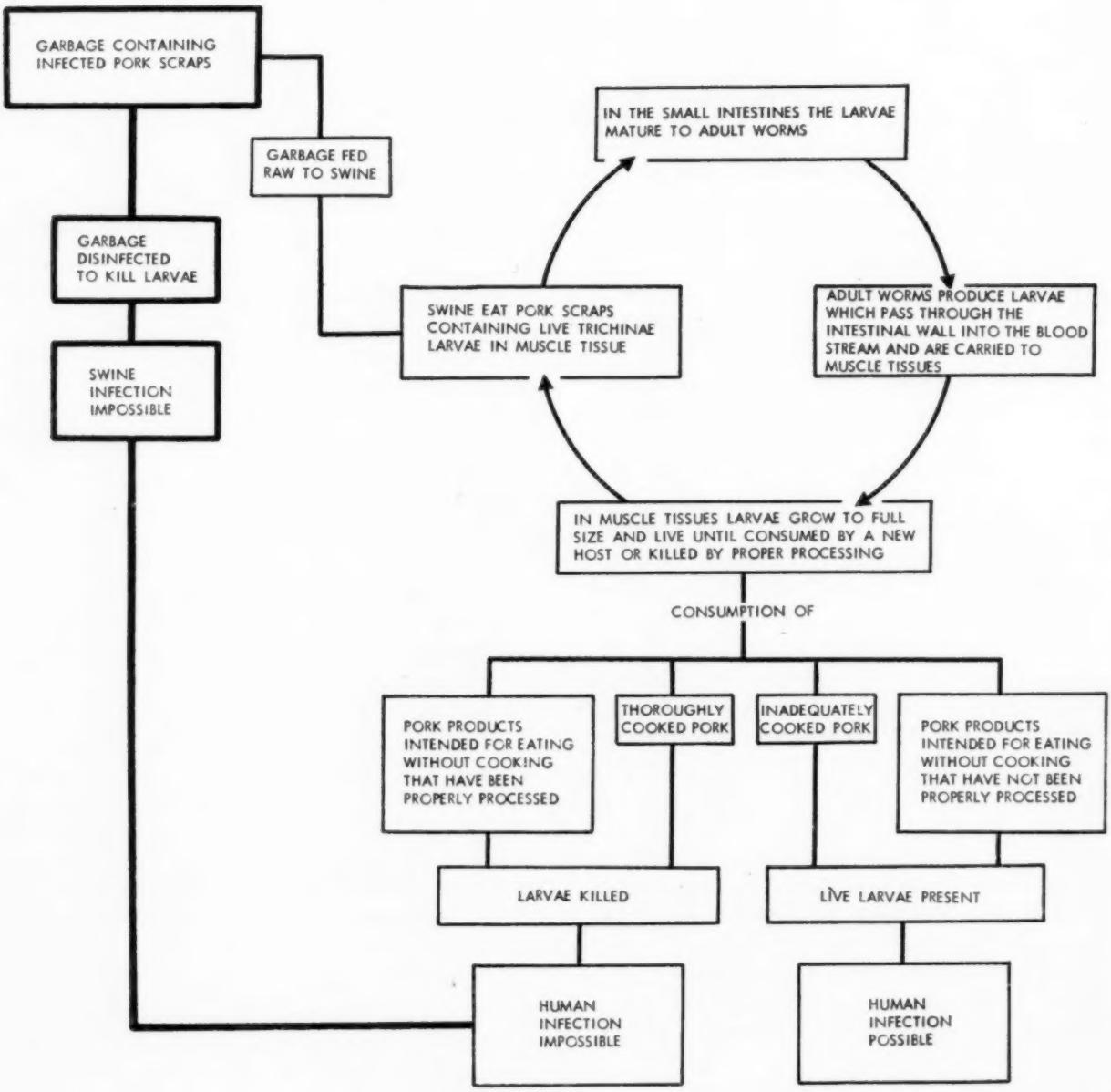
"2. Facts accumulated to date do not justify, at present, a general recommendation to local voluntary and official agencies that any additional procedures (readings by cardiologists, recording of such items as height and weight, and self-completed history form) over and above those outlined in the preceding paragraph be added to mass chest X-ray screening programs in order to raise the level of case finding for heart disease, except on a special study basis."

The practices of many communities have long been in accord with these principles, and the joint statement represents a crystallization of the experience of these communities.

No single satisfactory screening test, or combination of tests, has as yet been developed which could be justified solely as a way to detect heart disease before obvious signs and symptoms appear. That is why the epidemiological study now in progress at Framingham, Mass., under the auspices of the National Heart Institute includes "an appraisal of the value and efficiency of various methods and procedures for diagnosing heart disease." As the Institute further points out: "This may lead to a simple way of quickly screening people to detect those who have heart disease." In the meantime, however, community-wide chest X-ray surveys remain an opportunity for cardiovascular case finding that should not be overlooked.

From the Division of Chronic Disease and Tuberculosis, Public Health Service.

Trichinosis


GARBAGE CONTAINING INFECTED PORK SCRAPS
GARBAGE FED RAW TO SWINE
GARBAGE DISINFECTED TO KILL LARVAE
SWINE INFECTION IMPOSSIBLE
IN THE SMALL INTESTINES THE LARVAE MATURE TO ADULT WORMS
SWINE EAT PORK SCRAPS CONTAINING LIVE TRICHINAE LARVAE IN MUSCLE TISSUE
ADULT WORMS PRODUCE LARVAE WHICH PASS THROUGH THE INTESTINAL WALL INTO THE BLOOD STREAM AND ARE CARRIED TO MUSCLE TISSUES
IN MUSCLE TISSUES LARVAE GROW TO FULL SIZE AND LIVE UNTIL CONSUMED BY A NEW HOST OR KILLED BY PROPER PROCESSING
CONSUMPTION OF
PORK PRODUCTS INTENDED FOR EATING WITHOUT COOKING THAT HAVE BEEN PROPERLY PROCESSED
THOROUGHLY COOKED PORK
INADEQUATELY COOKED PORK
PORK PRODUCTS INTENDED FOR EATING WITHOUT COOKING THAT HAVE NOT BEEN PROPERLY PROCESSED
LARVAE KILLED
LIVE LARVAE PRESENT
HUMAN INFECTION IMPOSSIBLE
HUMAN INFECTION POSSIBLE

Human Trichinosis: Transmission and Control

Prevalence • Transmission • Prevention

Highlights from the First National Conference on Trichinosis, 1952

The problem of trichinosis in the United States was reexamined at the First National Conference on Trichinosis, held at the American Medical Association's headquarters in Chicago on December 15, 1952. Sponsoring the conference were the American Board of Veterinary Public Health, the American Medical Association, the American Society of Clinical Pathologists, the American Veterinary Medical Association, the Association of State and Territorial Health Officers, the Conference of Public Health Veterinarians, the Michigan-Memorial Phoenix Project of the University of Michigan, and the Public Health Service.

Topics considered by the conference included the prevalence of trichinosis in man and in swine, principal clinical features of the disease in man, relation of garbage to swine diseases, regulation of garbage-feeding practices, the Federal meat inspection program, the effects of rapid-freezing temperatures and of ionizing radiation on trichinae in pork, and State problems in the control of garbage-borne swine diseases.

The précis appearing here of eight of the conference discussions were prepared by the discussants. The essential points of a ninth, by Ralph J. Van Derwerker of the Public Health Service, are included in the paper presented on page 421. Duplicated copies of the complete papers and of the recommendations adopted by the conference may be obtained from the Secretary of the First National Trichinosis Conference, c/o Veterinary Public Health Section, Epidemiology Branch, Communicable Disease Center, Public Health Service, Atlanta 5, Ga.

A Health and Economic Problem

Trichinosis is a disease of animals, particularly of swine, which affects man when raw or improperly cooked pork containing viable trichinae is eaten. Trichinosis has been shown to have an almost worldwide distribution. It is most prevalent in countries where pork is often consumed raw and least prevalent in Jewish and Mohammedan areas.

Hall and his associates have published a series of papers concerning examination for trichinae of human diaphragms obtained at autopsy. Of 5,313 diaphragms, 855 showed evidence of trichinae. It is estimated that 1 out of 6 persons in the United States, or about 25,000,000, alive today probably harbor trichinae. To reach this total, there would have to be 350,000 new infections each year. If the conservative figure of 51 larvae or more per gram of diaphragm muscle is used as an arbitrary threshold for producing symptoms, 4.5 percent of

all persons infected, or about 16,000, should exhibit clinical symptoms. This estimate far exceeds the annual average of 336 cases (1942 through 1951) reported in this country. The difference is probably due to inadequate reporting, mildness of symptoms, and the difficulties of making a clinical diagnosis.

It is estimated that of the 60,000,000 hogs slaughtered yearly, 1.5 percent, or 950,000, are infected with trichinae. Although only 40 percent of the trichinosis in hogs can be blamed on those hogs fed entirely on raw garbage, a majority of the remaining 60 percent must be attributed to those fed partly on raw garbage.

Trichinosis is a national problem not only of public health concern, but of economic importance to producers of pork.

—VERNON B. LINK, M.D., *deputy officer in charge of the Communicable Disease Center, Public Health Service*

Garbage-Borne Swine Diseases

Garbage serves as an excellent vehicle for transmission of viral, bacterial, and parasitic diseases in swine. Hog cholera, vesicular exanthema, foot-and-mouth disease, salmonellosis, tuberculosis, brucellosis, and trichinosis are all transmitted in garbage. Hog cholera is the most important porcine disease in the United States, but fortunately this disease is not transmitted to other animals or to man. Vesicular exanthema produces heavy losses among hogs, the only animals that are naturally susceptible to this disease. Foot-and-mouth disease affects not only hogs, but also other cloven-footed animals. Trichinosis affects swine and at least 25 other species of animals. Its chief economic importance lies in the danger of its transmission to man.

All four of these important diseases of swine are associated with the feeding of raw garbage. Their control, therefore, depends upon elimination of this practice. Uniform State and Federal regulations are needed for control of garbage feeding.

Canada and Great Britain have had success in controlling these diseases by requiring that garbage which is fed to swine must be cooked. Atlanta, Ga., has found incineration to be the most efficient and economical method of disposing of garbage.

—JAMES H. STEELE, D.V.M., M.P.H., *chief of the veterinary public health section, epidemiology branch, Communicable Disease Center, Public Health Service.*

Trichinae in Swine

Of the many mammalian hosts of *Trichinella spiralis*, only the domestic hog is of importance from the standpoint of human health. There is reason to believe, however, that domestic swine in the United States were once infected with trichinae to a much greater extent and to a significantly greater degree than at present.

In the 1930's nearly 1 percent of farm-raised hogs and about 10 percent of garbage-fed hogs in the Atlantic seaboard States harbored trichinae. At least two-thirds of the infected farm-raised hogs contained the parasites in numbers so small that they would undoubtedly have escaped detection by routine microscopic inspection, whereas only about one-third of the infected garbage-fed hogs contained parasites in such small numbers.

In a recent study of more than 3,000 hogs originating in several corn-belt States, trichinae were found in only 0.6 percent when the examinations were made by digesting the pillars of the diaphragm in acidified pepsin. Trichinae were not found in any of these infected diaphragms when they were examined routinely in press preparations, showing that the infections were very light. In parallel studies of a series of about 1,500 samples from garbage-fed hogs on the eastern seaboard, trichinae were found in 11.5 percent when the samples were examined by the digestion method and in nearly 5 percent when examined routinely in press preparations. These data reemphasize the role of garbage feed in the transmission of trichinae to hogs and to human beings who eat the infected meat raw, inadequately cooked, or imperfectly cured.

—BENJAMIN SCHWARTZ, M.D., *chief of the zoology division, Bureau of Animal Industry, U. S. Department of Agriculture*

Prevalence and Prevention

In autopsy surveys of over 10,000 persons in the United States, the average incidence of recovery of trichinae larvae was 16 percent. However, it has been demonstrated that with more thorough methods of examination the incidence of recovery is about 30 percent. Available data indicate that the incidence of trichinosis in both man and swine in the United States is the highest of any country in the world. The vast majority of human infections are mild and subclinical; most infections that are severe enough to reach the clinical level are not diagnosed; and among those that are clinically diagnosed, the mortality rate is about 5 percent.

Besides thorough cooking, the methods of prevention include curing and low-temperature treatment of pork as prescribed by Federal regulations. Other control measures adopted by some countries include microscopic inspection of muscle from every hog that is slaughtered, prevention of feeding of garbage to hogs, or cooking of raw garbage if it is to be fed to hogs. Promising new methods of rendering pork free from the danger of trichinosis include extension of techniques for low-temperature treatment and exposure of all raw pork to ionizing radiation. These new methods should be subjected to further intensive research. High hope is held that in the near future all raw pork may be so processed as to reduce the danger of trichinosis to man to a point of practical insignificance in this country.

—S. E. Gould, M.D., *pathologist, Wayne County General Hospital, and clinical professor of pathology, Wayne University College of Medicine*

Federal Meat Inspection

The method of control of trichinosis currently employed by the Federal meat inspection service of the U. S. Department of Agriculture contemplates special treatment under inspection supervision of all pork products customarily eaten without cooking. The so-called microscopic examination was used between 1890 and 1906, but only on export pork. Since 1906 no microscopic examinations have been made of any pork coming under the Federal meat-inspection program.

Under the Federal program, almost all processed pork products are classed as pork products customarily eaten without cooking. The exceptions include bacon, fresh pork sausage and similar breakfast sausage, and hams and pork shoulder cuts that have been cured but not smoked or otherwise processed. Fresh pork cuts, such as chops and roasts, are not classed as pork products customarily eaten without cooking.

Thoroughly tested heating, refrigerating, or curing processes are prescribed and used in federally inspected meat-packing plants for treating the specified pork products. An extensive survey made recently found that the products so treated were safe without exception. Only dead trichinae were found, and these only in a comparatively small number of cases.

—A. R. Miller, D.V.M., *chief of the Federal meat inspection service, Bureau of Animal Industry, U. S. Department of Agriculture*

Low-Temperature Treatment

Although data on the effects of rapid-freezing temperatures on trichinae are thus far limited, recent studies indicate that pork may be made safe against trichinosis by (1) rapidly lowering its temperature to −35° C. or (2) by an initial rapid lowering of its temperature to −18° C. and subsequent storage for 3 days at this temperature. Thus, only a few hours may be required to make pork safe by a rapid-freezing method instead of up to 20 days as prescribed under present Federal regulations.

The practicability and the desirability of adopting a rapid-freezing method to make all pork, both that intended for interstate shipment and that for local sale, free from infective trichinae are considered.

—Donald L. Augustine, Ph.D., *professor of tropical public health, Harvard University*

Effect of Ionizing Radiation

Ionizing radiations, such as X-rays, gamma rays, and high energy electrons, have been

shown to be effective in killing or interfering with normal development of living material. During the past year the effect of radiation on the life cycle of the causative agent of trichinosis (*Trichinella spiralis*) has been studied.

It has been found that about 1,000,000 roentgens of 200 kv. X-rays are necessary to kill all trichina larvae irradiated in vitro. The killing dose of cobalt-60 gamma rays (1.17 and 1.31 Mev.) was found to be about the same.

However, the life cycle of trichina requires that the ingested larvae grow to maturity in the host and then reproduce. It has been found that radiation doses much smaller than killing doses are sufficient to inhibit maturation and that still smaller doses will sterilize the female trichinae and prevent reproduction. With cobalt-60 gamma rays, about 10,000 roentgens will sterilize all the female larvae in rat muscle, as shown by microscopic examination of the adult female forms recovered from the intestinal tract at 6 days and larval forms recovered from the muscle of the test animals at 30 days. Somewhat lower than killing levels of 200 kv. X-rays are equally effective.

Because of the great penetrating power of cobalt-60 radiation, it is believed that large sections of meat such as hog carcasses could, under suitable conditions, be irradiated as a whole, thus providing a direct method of breaking the trichina cycle.

—Henry J. Gomberg, Ph.D., *assistant director, Michigan-Memorial Phoenix Project, and research associate, Atomic Energy Commission Laboratory, University of Michigan; and* S. E. Gould, M.D., *pathologist, Wayne County General Hospital, and research associate, Atomic Energy Commission Laboratory*

State Problems in Control

The continued practice of feeding raw garbage to only a small portion of the swine marketed in the United States is jeopardizing the entire livestock industry of the country. This practice spreads trichinosis, cholera, vesicular exanthema, and even foot-and-mouth disease.

Practices of hog raising vary in different sections of the United States, and the problems of garbage-borne diseases vary with different States and sections of the country. The two main points to consider in controls affecting garbage-borne diseases of hogs are these: (1) Is the State an exporter or importer of hogs and pork? (2) Is the State an exporter or importer of garbage?

Present interstate and State regulations designed to prevent garbage-borne diseases of hogs are ineffectual. Regulations addressed solely to the movement of raw garbage interstate are not sufficient to handle the problems of the States in controlling garbage-borne diseases of swine. Controls must consider garbage, hogs, and pork. The following regulations are recommended: (1) Prevent the interstate movement of raw garbage except under certain specified conditions; (2) prohibit movement of live hogs and pork out of any State which shall fail to have and enforce regulations requiring the cooking of garbage that is fed to hogs.

The success of any individual State's efforts to control these animal diseases rests squarely on the effectiveness of interstate controls.

—Oscar Sussman, D.V.M., *chief of the bureau of veterinary public health, division of environmental sanitation, New Jersey State Department of Health*

Trichinosis Control and Vesicular Exanthema

By JACK C. HALDEMAN, M.D., M.P.H., JAMES H. STEELE, D.V.M., M.P.H., and RALPH J. VAN DERWERKER, B.S.

TRICHINOSIS, a parasitic disease of animals and man, is a public health problem in the United States. Apparently, it is more serious here than in any other country in the world.

The evidence upon which these statements are based has been in the literature for over a decade and a half (*1–3*). Although there is still no known specific treatment for this disease in either man or animals, there are practicable preventive measures. Yet in the United States relatively little has been accomplished in the application of these measures and in the breaking of the trichinosis cycle, with the exception of Federal meat inspection procedures to control the processing of pork to be eaten without cooking.

In the late 1930's and early 1940's, studies by Gould (*4*), Hall (*3*), Sawitz (*5*), and Wright (*6*) indicated that 1 out of every 6 persons in the United States was infected to some extent with the parasite *Trichinella spiralis*. Wright and his associates, on the basis of the studies at the National Institutes of Health, estimated that 4.5 percent of the number infected had sufficiently heavy infections to have developed clinical symptoms (*6*). If these figures could be assumed to be applicable to the present population, it would mean that millions of Americans alive today have been infected to some extent with the parasite, and it seems probable that many of these persons have had clinical symptoms. Further, on the basis of the aforementioned studies the number of cases expected annually would be several thousands.

Although trichinosis is a reportable disease in 44 States, the disease is seldom diagnosed clinically, and infections other than those in epidemic form are usually unrecognized. The fact that for the 10-year period, 1942 through 1951, an average of only 336 cases was reported annually to the Public Health Service illustrates this point. According to unpublished records, at least 1 epidemic occurred during this period which involved over 300 cases of trichinosis, and in this instance the disease was not diagnosed until some 24 days after the first symptoms were reported.

The practice of feeding raw or untreated garbage is known to be of primary importance in the spread of trichinae among swine. Schwartz (*7*) reports an incidence of trichinae in raw-garbage-fed hogs about five times as great as that in so-called grain-fed hogs. The consumption of raw, untreated, or inadequately cooked pork from garbage-fed hogs, furthermore, is considered primarily responsible for the high incidence of *Trichinella spiralis* in man (*8, 9*). In both England and Canada, the sterilization of all garbage fed to swine has been

Dr. Haldeman, from 1948 to 1951 medical director of the Arctic Health Research Center of the Public Health Service, is assistant chief of the Bureau of State Services. Dr. Steele, chief of the veterinary public health section of the epidemiology branch, Communicable Disease Center, Public Health Service, and veterinary consultant for the Bureau of State Services, was the secretary of the First National Conference on Trichinosis, held in Chicago on December 12, 1952. Mr. Van Derwerker, chief of the municipal and rural branch of the Division of Sanitation, is Public Health Service representative on the Continuing Committee of the National Conference on Trichinosis.

required by law for many years, and in both of these countries the incidence of trichinosis is relatively low.

Vesicular Exanthema Epidemic

The recent nationwide epidemic of vesicular exanthema, a virus disease in swine, has focused new attention in this country on the dangers of feeding raw garbage to swine. As a result of this epidemic, there are indications of strong support among the swine industry and the agricultural agencies for the elimination of feeding raw garbage.

On June 16, 1952, vesicular exanthema was detected among swine at a hog-cholera serum plant in Nebraska, and within 8 months infected swine had been found in 36 States scattered throughout the Nation. Epizootiological investigations by the U. S. Department of Agriculture and the various State agencies concerned indicated the possibility that garbage containing infected pork scraps had been fed raw to swine at a farm in Wyoming, and that contaminated swine from this State and from Nebraska had been shipped to other areas of the country before the disease was recognized. Most of the outbreaks in the other States were also identified with establishments where garbage was fed raw to swine, and the probable vehicle of infection was found to be contaminated pork scraps in the garbage.

Vesicular exanthema, though not transmissible to man and therefore not of direct public health significance, has serious economic and agricultural implications. The U. S. Department of Agriculture reported on February 7, 1953, that since the beginning of the epidemic 100,801 animals in 32 of the States involved had been disposed of by burial or special processing, and that 44,821 animals are awaiting disposal. It is evident, therefore, that the losses to swine raisers and allied industries and the costs to State and Federal governments for indemnities will be many millions of dollars. And to these must be added the costs of disinfecting plants, stockyards, and railway stock cars, of supervising disinfection, and other similar expenses, as well as losses resulting from restraint of livestock movement as a result of quarantines.

An additional concern to agricultural authorities is the fact that the symptoms of vesicular exanthema in swine are almost identical to those of foot-and-mouth disease. The control of foot-and-mouth disease depends so much on prompt diagnosis, slaughter of the infected herd with burial on the premises, and thorough disinfection of the entire area and plant that any delay in diagnosis of vesicular disease could well be disastrous to the livestock industry of the Nation.

Public Health Considerations

Thus, since disinfection of garbage fed to swine is of major importance in the eradication of both trichinosis and vesicular exanthema, combining the public health concern over trichinosis with the agricultural and economic concern over vesicular exanthema is a logical and necessary step. In addition to the public health worker's concern with trichinosis control, he is concerned with sanitary disposal of community solid wastes. For example, in some areas where the practice of feeding garbage to swine was discontinued during the epidemic, the garbage was disposed of by dumping it into a convenient river, thus creating a water pollution problem. Also, of course, he is concerned with such problems of hog farm sanitation as insect and rodent control and nuisance abatement.

Probably the best disease control measure, as well as sanitation measure, would be the discontinuance of raising swine on garbage and the disposal of garbage in incinerators or sanitary landfills or the utilization of it as dried feed or fertilizer compost. However, it is estimated that about 1,500,000 hogs are raised annually in the United States either wholly or partly on commercial garbage. Although they represent less than 2 percent of the hog population in this country, the shift away from garbage feeding would have an obvious economic impact. Until such a step is taken, therefore, the next best solution appears to be disinfection of garbage before it is fed to swine.

The Public Health Service's part in the regulation of garbage-feeding practices concerns primarily the interstate shipment of garbage. In 1941, an Interstate Quarantine Regulation

(section 72.23, 1947 revision) was issued, requiring that any garbage shipped or transported across State lines must be heated to 212° F. for 30 minutes before being fed to swine. Prior to the 1952 outbreak of vesicular exanthema, seven of the States and the Territory of Hawaii had similar regulations. Since the outbreak 9 States and Alaska have adopted regulations and/or legislation requiring heat-treatment of garbage used for swine feed, and at least 28 other States have either introduced similar measures in their legislatures or are preparing to do so.

USDA–PHS Control Measures

Recognizing the importance of the public health worker's role in the sanitary disposal of garbage, the U. S. Department of Agriculture last year requested the assistance of the Public Health Service in its vesicular exanthema eradication program. The Department urged the Federal Security Administrator to take emergency measures to insure enforcement of the Interstate Quarantine Regulation concerning garbage and expressed the hope that the Public Health Service would take appropriate steps to stimulate and assist State programs requiring disinfection of garbage fed to swine.

In accordance with the pursuant understanding, the U. S. Department of Agriculture has been concerned primarily with measures designed to arrest the current outbreak of vesicular exanthema. These include supervision of disinfection of contaminated yards, pens, and railway stock cars; quarantine of affected areas; and a program for disposal of and indemnity for condemned swine, and the cleaning and disinfection of infected premises.

Both the Department and the Service have, of course, been interested in the development of State programs for controlling the feeding of raw garbage to swine. In view of the lack of published information on methodology of disinfecting garbage, they worked together in compiling and publishing a summary of all available material on the subject (*10*). This activity pointed out the need for further research concerning heat-treatment systems, equipment, economics, and related time-thermal characteristics required for disinfection. Iowa State College has recently applied for a Public Health Service grant to study time-temperature requirements for effective disinfection of garbage in relation to various methods of heat treatment.

The Public Health Service has also been cooperating in the vesicular exanthema eradication program through more effective control over the interstate shipment of raw garbage. In August 1952, the Federal Security Agency regional offices were requested to determine the extent of current violations of the Interstate Quarantine Regulation concerning garbage. These regional surveys have resulted in considerable program progress in certain major metropolitan areas and in a number of border areas where interstate shipment of raw garbage has been practiced.

Intrastate Regulation

Intrastate as well as interstate regulation of garbage-feeding practices is essential if the spread of garbage-borne diseases is to be controlled. In many States, disinfection of garbage is still not required, and many of the existing programs need strengthening.

A logical first step in developing intrastate control programs is a survey of garbage collection and disposal practices in each State. A basic data form (PHS Form 1764) has been developed by the Public Health Service for use in such surveys and has been made available to the States. Use of this form will permit collection of comparable data and, with the cooperation of State and local health departments, it should be possible to develop a nationwide inventory of practices. Such data should facilitate practicable planning of control efforts locally as well as in the States and for the Nation as a whole.

A second important step is the enactment of State legislation requiring the disinfection of all garbage used for swine feed and proper sanitation of hog farms. A suggested guide for such legislation, based on present regulations and experience in various States, has been prepared by the U. S. Department of Agricul-

ture and the Public Health Service. This guide is available through the Federal Security Agency regional offices. It provides technical data which will aid the States in developing legislation that is not only legally sound but also practical. For example, it is usually more practical to require treatment of garbage at the feeding farm than at its source; also, the requirement of a license or a permit has been found to be the most practical method of administering a program.

Although disinfection of garbage is the prime factor in the control of trichinosis and vesicular exanthema, the complete sanitation of the establishment involved should be given serious and continued consideration in any State control program. Sanitary solid waste disposal includes not only the disinfection of the potential vector of disease, but also the handling of the media so as to minimize insect and rodent breeding and to prevent water pollution. Nuisance abatement is also a factor and should be taken into account.

For many years, community solid waste problems have been more or less neglected by health workers, but the fact that these problems have serious health implications is now receiving increasing recognition. The recent vesicular exanthema outbreak has underscored the epidemic possibilities of one improper method of garbage disposal and has provided support for trichinosis control efforts. The time is appropriate for a vigorous nationwide program for proper treatment or disposal of garbage to control disease and to improve sanitation.

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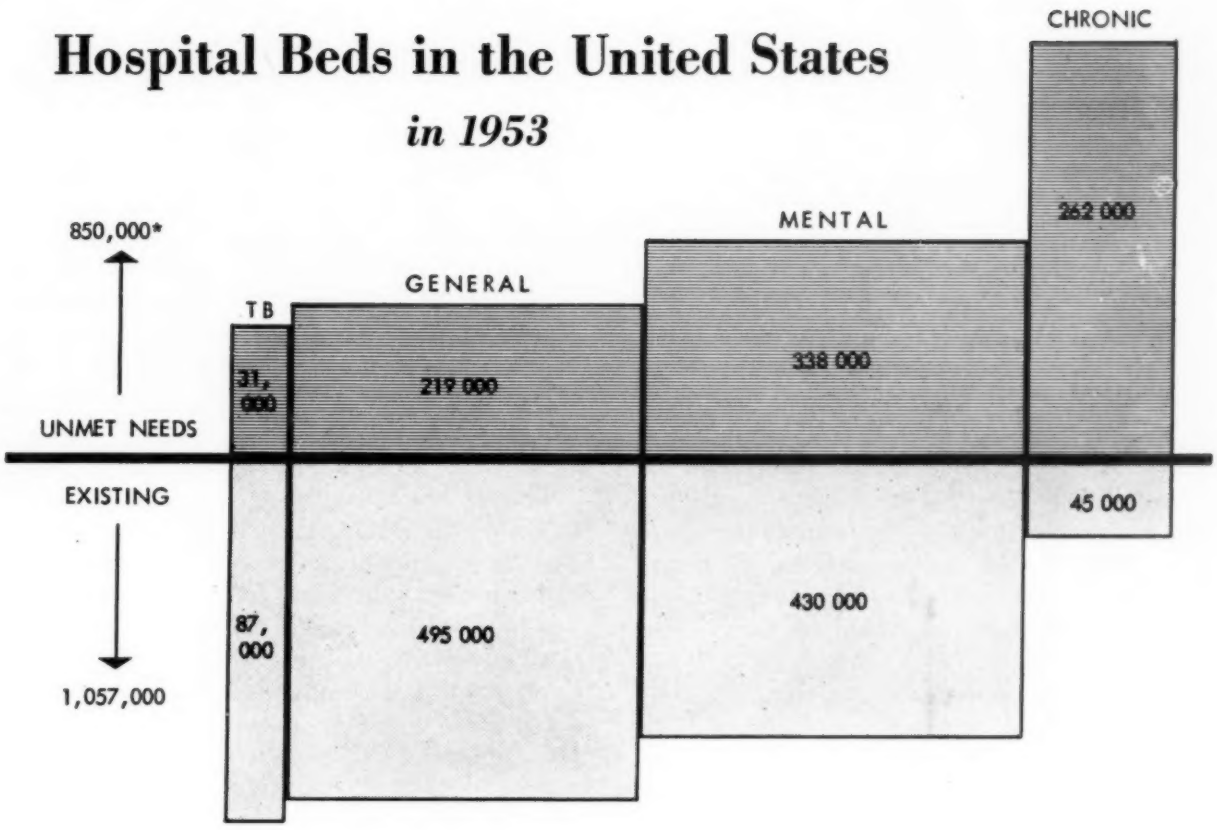
Hospital Beds in the United States *in 1953*



*Exclusive of 117,000 Federal hospital beds. All data in this chart as of January 1, 1953.

By JOHN W. CRONIN, M.D., MAURICE E. ODOROFF, M.A., and LESLIE MORGAN ABBE, B.S.

HOSPITAL BEDS are symbols of hospital services and are not an end in themselves. They do provide a useful measure of the physical facilities at hand for furnishing hospital services. The capacity to provide adequate health care in a community or a nation can be gauged substantially by the number of beds available, in relation to the number of people living in the area.

Prior to 1946 the building of new hospitals and hospital additions in the United States was sporadic, proceeding slowly in some communities and rapidly in others, according to local pressures and means and without regard to any general pattern or orderly plan. At the same time many communities and sections of the Nation had little or no available hospital care within ready reach. The end of World War II made possible a renewed interest in providing for many domestic needs. Physical facilities for the Nation's health became one aspect of this interest.

A broad program was launched in 1946 by Federal legislation to assist the States to inventory their existing hospitals, to define the total need for hospitals, and to map out a construction program to provide needed hospital and health center services. Financial assist-

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ance was included, both for planning and construction. This legislation, the Hospital Survey and Construction Act (Public Law 725, 79th Cong.) has been popularly known as the Hill-Burton Act. Its administration was placed under the Surgeon General of the Public Health Service, as a part of the basic Public Health Service Act.

It required more than a year to develop initial inventories and comprehensive plans. Hospital inventories existed, compiled by the American Hospital Association and the American Medical Association, but the idea of inventory-plus-statewide-program was entirely new. The first complete set of these comprehensive plans reflected the facts as of about January 1, 1948. Today, after 5 years of experience on the part of the State hospital agencies, the record has been refined and general planning is based upon more intimate knowledge of local situations.

This report appraises the situation nationally and locally, as reflected by the current State hospital plans under the Hospital Survey and Construction Act. It also comments on the influence of the Hill-Burton program during 5 years of operation and refers to current problems relating to standards of need and standards for the degree of Federal aid now appropriate.

Where We Are Now

In the Nation as a whole we now have 1,218,000 existing hospital beds, according to State plan inventories as of January 1, 1953. These plans excluded Federal beds. This total is 202,000 more than was recorded in the first Hill-Burton inventory as of January 1, 1948. Of these, however, 161,000 beds are classified by the State agencies as nonacceptable on the basis of fire and health hazards, so that our net acceptable plant for all purposes is 1,057,000 beds. Almost one-half of this total, or 495,000 beds, is in general hospitals; mental hospitals have 431,000 beds; tuberculosis hospitals, 86,000 beds; and hospitals for chronic care, 44,000 beds.

The Hospital Survey and Construction Act establishes standards of need. for planning purposes, in each category of hospital. These standards are limits for construction with Federal assistance and do not preclude State planning to higher levels if warranted. For most States, however, the standards established in the Hill-Burton Act are much beyond the level of existing facilities. By these standards about 850,000 additional beds are needed nationally to provide adequate hospital care for all the people. Of these, 336,000 are needed in mental hospitals, 262,000 in chronic hospitals, 219,000 in general hospitals, and 31,000 in tuberculosis hospitals. Percentagewise, the Nation has 77 percent of its need met in tuberculosis facilities, 69 percent in general hospitals, 56 percent in mental hospitals, and 14 percent in chronic hospitals.

The historical record, by years from 1948 to 1953, for each category appears in table 1. By definition under the present regulations, this inventory excludes beds for civilians in Federal hospitals. These are chiefly in facilities of the Veterans Administration, plus a comparatively small number of beds in the hospitals operated by the Indian Service and the Public Health Service.

During the 5 years for which comprehensive State planning has been carried on, considerable net progress has been made in general hospitals: 107,000 additional acceptable beds are recorded, a gain of 28 percent. Tuberculosis beds have also increased more than 20 percent. Mental and chronic beds, on the other hand, while increasing slowly, are not keeping up with growth in population and obsolescence. In both these categories the remaining need is greater than in 1948. This constitutes one of the major challenges facing the Nation today in meeting the need for adequate hospital services.

National trends and national totals do not accurately reflect the real picture in regard to specific regions of the country. Among the States, wide differences exist as to relative status in providing an adequate hospital plant. Similar differences exist among the major socio-economic regions of the Nation. Generally speaking, the States with large means have the least unmet need, while the least wealthy States have the greatest need. Thus, New York and Connecticut have only about 3.2 beds per 1,000 population still required, for all purposes. Mississippi and Alabama each need 8.3 more

beds per 1,000 population, while the national average of unmet need is 5.5 beds per 1,000 population. Regionally, the greatest unmet need for general hospitals is still in the southeastern States, although substantial progress has been made here during the past 5 years.

Similar contrasts appear for mental hospitals. The unmet need, nationally, is still 2.2 beds per 1,000 population. In New England it is only 1 bed per 1,000, but throughout the southeastern and southwestern States this need is nearly 3 beds per 1,000. Comparative positions are shown in the maps and in table 2.

The Hospital Survey and Construction Act requires that a coordinated system of general hospitals be planned within each State, under

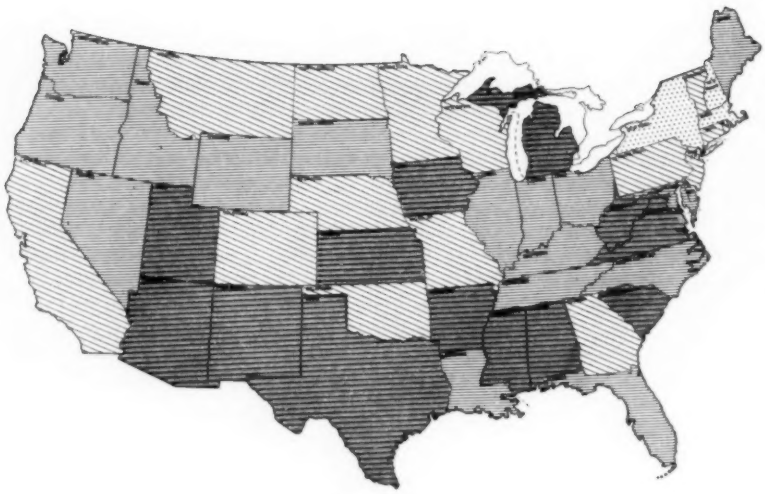
Table 1. Civilian hospital beds in the United States and Territories, 1948–53

Hospital category and year (as of Jan. 1)	Estimated total beds needed [1]	Existing beds				Estimated additional beds needed
		Total	Nonacceptable [2]	Acceptable		
				Number	Percent of total need	
All categories						
1953	1,899,279	1,218,781	161,354	1,057,427	55.7	848,567
1952	1,899,806	1,193,836	176,013	1,017,823	53.6	881,983
1951	1,883,487	1,185,480	175,562	1,009,918	53.6	873,569
1950	1,850,052	1,118,535	166,339	952,196	51.5	897,856
1949	1,776,673	1,025,179	145,307	879,872	49.5	896,801
1948	1,776,401	1,016,712	148,752	867,960	48.9	908,441
General hospitals						
1953	714,469	572,493	77,308	495,185	69.3	219,222
1952	708,574	554,084	79,750	474,334	66.9	234,240
1951	700,952	548,798	79,606	469,192	66.9	231,760
1950	682,601	513,814	76,028	437,786	64.1	244,815
1949	652,611	474,532	77,364	397,168	60.9	255,443
1948	652,974	469,398	81,254	388,144	59.4	264,830
Mental hospitals						
1953	766,463	490,598	59,591	431,007	56.2	336,676
1952	755,097	482,733	69,801	412,932	54.7	342,165
1951	744,323	483,310	67,780	415,530	55.8	328,793
1950	725,203	462,859	63,721	399,138	55.0	326,065
1949	692,150	428,931	47,304	381,627	55.1	310,523
1948	690,381	427,201	46,858	380,343	55.1	310,038
Tuberculosis hospitals						
1953	112,075	100,204	13,506	86,698	77.4	30,934
1952	133,899	99,147	11,597	87,550	65.4	46,349
1951	140,391	96,955	11,604	85,351	60.8	55,040
1950	148,936	94,024	12,513	81,511	54.7	67,425
1949	155,101	85,466	12,906	72,560	46.8	82,541
1948	155,987	84,158	13,007	71,151	45.6	84,836
Chronic hospitals						
1953	306,272	55,486	10,949	44,537	14.5	261,735
1952	302,236	57,872	14,865	43,007	14.2	259,229
1951	297,821	56,417	16,572	39,845	13.4	257,976
1950	293,312	47,838	14,077	33,761	11.5	259,551
1949	276,811	36,250	7,733	28,517	10.3	248,294
1948	277,059	35,955	7,633	28,322	10.2	248,737

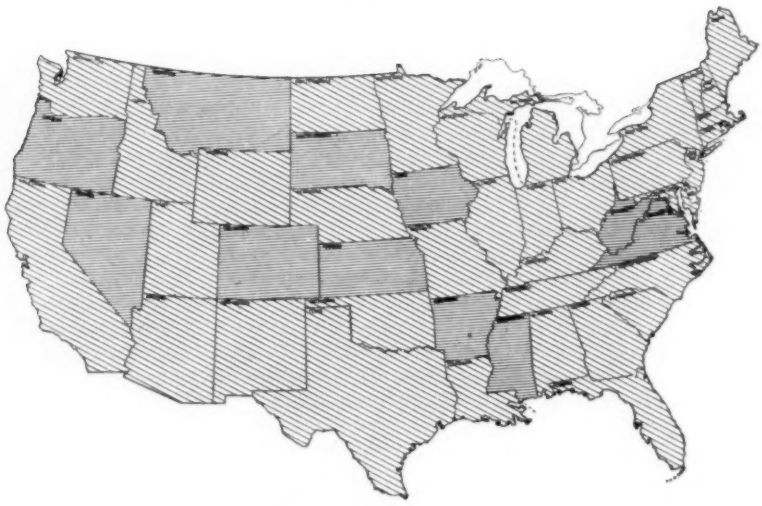
[1] As set by Title VI of Public Health Service Act.
[2] As classified by State agencies, on the basis of fire and health hazards.

Source: State Plans for Hospital Construction.

Remaining Need for Hospital Beds



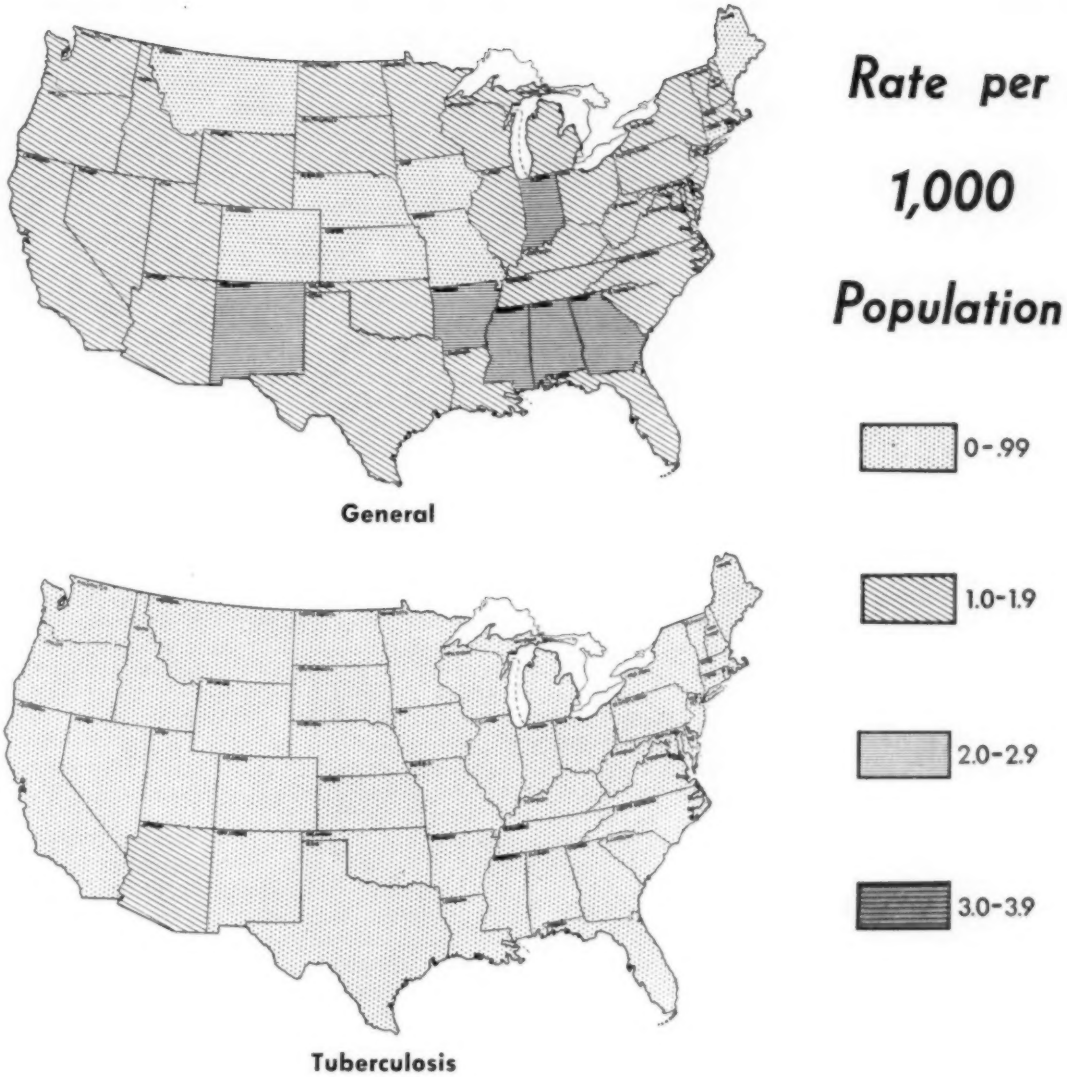
Mental



Chronic Disease

which regional hospital centers would provide leadership, specialized care, and consultation for smaller community hospitals within the region. Under the Hill-Burton program the United States is composed of 375 such regions, as defined in present State plans. Studies of these regions show that there are actually wide differences as to the level of facilities now available in single hospital regions. In Arkansas the proportion of acceptable facilities available varies from region to region, from about 25 percent of need met to nearly 75 percent. In Florida, it ranges from 42 percent to 87 percent; in Kansas, from 52 percent to 92 percent; and in Idaho, from 45 percent to 96 percent. Obviously, State totals may obscure important differences among hospital regions in the present available plant.

For local communities there are also areas of acute need with little or no available hospital plant. A recent check shows 250 hospital areas still without any acceptable hospital facilities. These areas include about 3 percent of the Nation's population and require some 13,000 beds to meet standards for general hospital care. This study also shows that about 5 percent of the population of the Nation live in areas where less than 25 percent of the general hospital facilities needed are available. These facts give some indication of the work yet to be done.



Effect of the Hill-Burton Program

The act requires a continuous inventory and positive planning of hospital expansion in each State. This has greatly stimulated orderly growth of the Nation's facilities for protecting the health of its people. Its direct encouragement of construction has been substantial, when measured by the dollar volume of hospital construction (*1*, *2*). During the last 3 years the value of work placed on Hill-Burton projects has averaged about one-third of all non-Federal hospital construction (see chart).

A number of additional benefits also have accrued (*3*). Perhaps the most significant, in regard to improving the quality of service, have been the very rapid increase in State statutes establishing hospital licensing, improved architectural design, attracting of physicians to rural communities, and creating a greater awareness of the problems of adequate care for chronic illness.

The effect of the hospital survey and construction program is quite significant in regard to the distribution of projects assisted. This is governed by the statutory formula for allocation among the States of the annual appropriation and by the conditions required as to a graduated scale for matching local funds. In each State, the formula for matching is based on population, weighted by its financial ability. As a result, the greatest Federal assistance has

Table 2. Additional needs for hospital beds in the United States as of January 1, 1953, according to State hospital plans approved under the Hill-Burton Act

State and socioeconomic region	Civilian population per plan (thousands)	Additional beds needed—rate per 1,000 population				
		All hospitals	General	Mental	Chronic	Tuberculosis
United States and Territories	153, 260	5. 5	1. 4	2. 2	1. 7	0. 20
New England	**9, 312**	**3. 8**	**1. 5**	**1. 0**	**1. 2**	**. 02**
Connecticut	2, 026	3. 2	. 9	1. 1	1. 2	----
Maine	912	5. 1	. 9	2. 3	1. 8	. 02
Massachusetts	4, 691	3. 7	1. 8	. 7	1. 2	----
New Hampshire	531	4. 2	1. 5	. 6	1. 9	. 14
Rhode Island	774	3. 5	2. 0	1. 2	. 3	. 01
Vermont	378	4. 9	1. 6	1. 3	1. 9	. 15
Middle East	**36, 117**	**4. 4**	**1. 3**	**1. 4**	**1. 6**	**. 20**
Delaware	318	4. 7	. 4	2. 9	. 9	. 52
District of Columbia	769	3. 2	1. 1	----	1. 8	. 31
Maryland	2, 306	4. 6	1. 1	2. 0	1. 2	. 32
New Jersey	4, 972	4. 9	1. 5	1. 6	1. 7	. 04
New York	15, 267	3. 3	1. 0	. 7	1. 4	. 14
Pennsylvania	10, 480	5. 4	1. 6	1. 7	1. 9	. 35
West Virginia	2, 005	7. 4	1. 7	3. 6	2. 0	. 06
Southeast	**31, 471**	**6. 8**	**1. 8**	**2. 9**	**1. 8**	**. 26**
Alabama	3, 053	8. 3	2. 0	3. 9	1. 9	. 53
Arkansas	1, 908	7. 6	2. 0	3. 6	2. 0	----
Florida	2, 729	5. 8	1. 5	2. 7	1. 7	----
Georgia	3, 418	5. 6	2. 2	1. 8	1. 6	. 07
Kentucky	2, 913	7. 1	1. 9	2. 8	1. 9	. 58
Louisiana	2, 670	6. 3	1. 3	2. 8	1. 9	. 22
Mississippi	2, 169	8. 3	2. 3	3. 5	2. 0	. 47
North Carolina	4, 014	6. 3	1. 6	2. 8	1. 9	----
South Carolina	2, 096	7. 0	1. 7	3. 2	1. 9	. 19
Tennessee	3, 281	6. 2	1. 7	2. 6	1. 5	. 47
Virginia	3, 220	7. 1	1. 8	3. 0	2. 0	. 37
Southwest	**11, 247**	**6. 3**	**1. 2**	**2. 9**	**1. 9**	**. 30**
Arizona	777	7. 8	1. 2	3. 7	1. 8	1. 03
New Mexico	668	8. 1	2. 0	3. 6	1. 9	. 59
Oklahoma	2, 218	4. 9	1. 5	1. 5	1. 8	. 12
Texas	7, 584	6. 4	1. 1	3. 2	1. 9	. 25
Central	**39, 893**	**5. 8**	**1. 4**	**2. 6**	**1. 8**	**. 09**
Illinois	8, 672	5. 6	1. 2	2. 7	1. 6	. 11
Indiana	3, 932	7. 1	2. 3	2. 6	1. 9	. 29
Iowa	2, 621	6. 6	. 8	3. 7	2. 0	. 01
Michigan	6, 361	6. 7	1. 8	3. 1	1. 8	----
Minnesota	2, 982	4. 7	1. 0	1. 8	1. 9	----
Missouri	3, 952	4. 6	. 9	1. 8	1. 7	. 23
Ohio	7, 938	5. 9	1. 3	2. 6	1. 9	. 10
Wisconsin	3, 435	4. 7	1. 2	1. 8	1. 7	----
Northwest	**7, 939**	**5. 2**	**1. 0**	**2. 3**	**1. 8**	**. 06**
Colorado	1, 307	4. 1	. 6	1. 6	2. 0	----
Idaho	588	6. 5	1. 6	2. 9	1. 9	. 12
Kansas	1, 905	6. 2	. 9	3. 3	2. 0	. 01
Montana	589	4. 4	. 7	1. 7	2. 0	----
Nebraska	1, 326	3. 7	. 9	1. 4	1. 4	. 10
North Dakota	605	4. 8	1. 5	1. 4	1. 8	----
South Dakota	650	5. 9	1. 5	2. 1	2. 0	. 29
Utah	687	6. 7	1. 4	3. 3	1. 9	. 08
Wyoming	282	5. 4	1. 1	2. 5	1. 8	. 06
Far West	**14, 449**	**4. 7**	**1. 5**	**1. 6**	**1. 6**	**. 08**
California	10, 421	4. 4	1. 5	1. 3	1. 5	. 09
Nevada	166	6. 5	1. 5	2. 6	2. 0	. 43
Oregon	1, 519	5. 7	1. 5	2. 2	2. 0	. 08
Washington	2, 343	5. 6	1. 5	2. 4	1. 7	----
Territories	**2, 832**	**9. 9**	**2. 1**	**3. 7**	**1. 8**	**2. 29**
Alaska	129	7. 6	3. 1	2. 1	1. 7	. 72
Hawaii	474	6. 1	1. 6	3. 1	1. 4	----
Puerto Rico	2, 203	10. 9	2. 2	4. 0	1. 9	2. 88
Virgin Islands	26	6. 0	----	4. 4	----	1. 55

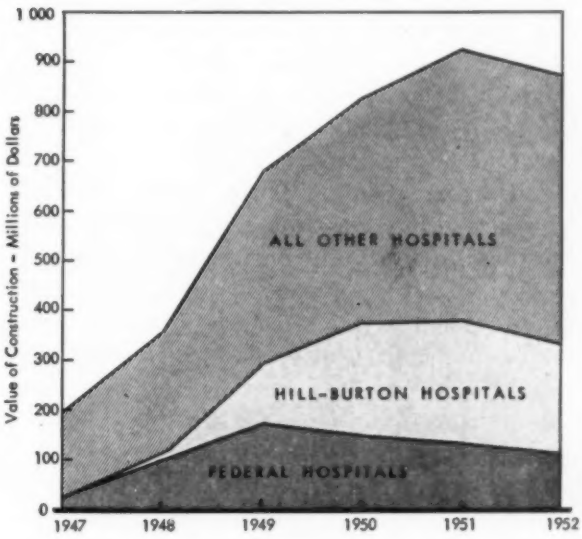
been given in the least wealthy States. The record shows that remaining need is still the greatest in these States.

Expressed broadly, the Hill-Burton program in 5 years has assisted in building about 1.0 bed per 1,000 population in the neediest States. These are States where the remaining additional need is still about 8 beds per 1,000 population. A proportionally lesser volume of assistance—about 0.3 beds per 1,000 population—has been accorded States with the least unmet need. In these States the remaining need is now under 3.5 beds per 1,000 population. Comparative study of the relation between remaining need and the degree to which these States are rural in character shows that the greatest need occurs in those States which have the highest proportion of population living in rural areas. In brief, Hill-Burton aid has been distributed to the greatest degree in those States which are least wealthy, most rural, and with greatest proportional unmet need.

Within the several States, distribution of assistance to specific projects has been governed by a priority system based on unmet need, as established in the State plan. In consequence the stimulus of Federal assistance has encouraged many communities where unmet need was the greatest to raise local funds for matching Federal grants, in accordance with the intent of the act. Recent studies have indicated that 38 percent of all general hospital beds added with Hospital Survey and Construction Act assistance have been in places under 10,000 in population; 31 percent in places of from 10,000 to 50,000 population; and 31 percent in metropolitan cities of over 50,000 population. Nearly 600 new projects have been placed in communities which previously had no acceptable hospital. At the other end of the scale, 21 teaching facilities at university medical centers have been assisted in 18 States.

Major emphasis has been placed by State agencies on Hill-Burton assistance to general hospital projects. As of January 1, 1953, general hospital beds added by approved projects amount to 73,168, of a total of 96,428 beds in all types of hospitals. A gradual change in this emphasis for most States appears important, if a reasonable balance between categories of facilities is to be attained.

Value of construction put in place



The hospital survey and construction program makes funds available not only for hospitals but for public health centers. In the Nation to date 377 such projects have been approved. The largest number of these, 283, will serve the 30,000,000 people in the 11 southeastern States. In this region these projects constitute a substantial increase in facilities available for preventive medicine and extend a means of providing for good health at a very moderate outlay. These projects represent a total expenditure of $28,000,000, or about 2 percent of the estimated total cost of $1,588,000,000 for all projects assisted through January 1, 1953, by Hospital Survey and Construction Act funds.

Problems Ahead

After 5 years of active operation of this cooperative Federal-State program, problems are emerging which were not at first anticipated. One group of problems involves the technical aspects of setting more precise standards of need:

1. The standard for tuberculosis beds required, as gradually evolved since 1917, is not on a population basis, but is related to the mortality rate. The mortality rate for tuberculosis continued to decline rapidly and dropped to a rate of 20 per 100,000 population for 1951. This is in contrast to a rate of 46 in 1940 and 200 at

the turn of the century. New cases of active tuberculosis, however, continue to be discovered at a rate which is declining very slightly. It now seems clear that new standards based on incidence of active cases should be substituted for the present basis of planning under the act.

2. One of the important innovations in the Hill-Burton inventory is the distinction made between acceptable and nonacceptable beds. For planning purposes, only acceptable beds are recognized as counting against total need. There is still a considerable variation among State plans as to the degree to which nonacceptable beds have been identified and taken into account for planning. As shown by table 1, nonacceptable beds today amount to about 15 percent of all existing beds in the Nation. In some States only a few such beds have been distinguished. Sometimes this arises from the assumption that facilities licensed must be held acceptable, even though there may be substantial public hazards existing. For example, Kentucky and Alabama have recorded only about 0.25 beds per 1,000 population as unacceptable, while Mississippi, Louisiana, and Virginia report 1.5 beds or more per 1,000 population as unacceptable. Three States, Georgia, Kansas, and Connecticut, have recently modified their records by increasing the designation of unacceptable beds very substantially. There is a need for the establishment of practical and comparable minimum standards of acceptability.

3. A third technical problem relates to the role of existing beds for civilians in Federal hospitals. Supporters of the viewpoint that these beds should be included in State hospital plan inventories are increasing. According to last available reports there are existing about 46,000 such general hospital beds for civilians, 55,000 mental hospital beds, and 15,000 tuberculosis hospital beds, which are not now recorded in Hill-Burton plans. These are not distributed uniformly among the States in relation to the population, and cannot all be regarded as reasonably accessible. They still constitute a considerable proportion of the total actual hospital plant. For the present they could probably be added to the record without changing the levels of total need, since many States find these goals greater than the apparent ability of their people to achieve at this time.

A second group of problems relates to broad policy for standards governing the degree of Federal assistance:

1. The Hospital Survey and Construction Act constitutes a fairly advanced form of grant-in-aid principles. It has the practical effect of producing its maximum program in States of minimum income and greatest need. Various proposals have arisen for modifying this distribution of aid among the States and also for requiring State support in addition to local support.

2. Within most States, there are marked differences among hospital areas in need and financial resources. The present Hospital Survey and Construction Act recognizes this situation. An option is provided which varies the percentage of Federal assistance on specific projects, as an alternate to selecting a single percentage for all projects in any one State. Interest in using this option is increasing, as it facilitates actual construction in remaining areas having acute need and restricted means.

Summary

1. The number of existing hospital beds provides a useful measure of the hospital services available to a community and to the Nation.

2. Continuing inventories and comprehensive State plans under the Hospital Survey and Construction Act of 1946 define total need for hospital beds and indicate a positive construction program.

3. According to these State plans (which do not include Federal beds) the United States on January 1, 1953, had 1,057,000 acceptable hospital beds for civilians, or 56 percent of the total need. The existing national plant for each category of hospital amounted to the following percentages of total need: tuberculosis 77 percent, general 69 percent, mental 56 percent, chronic 14 percent.

4. Marked differences exist among the States, and among the broad socioeconomic regions of the country, in the relative number of hospital beds available per capita. Present resources, or their lack, are closely related to the economic ability of the area.

5. The Hill-Burton program has had a considerable impact, through 5 years of active operation, in beginning to reduce differences in unmet need for beds—locally, by States, and by broad socioeconomic regions. The total dollar value of work put in place with Hill-Burton aid has averaged about one-third of all non-Federal hospital construction. Its distribution has been both rural and urban. Although the actual number of beds for mental and chronic care has increased considerably since 1948, growth in population and the need for replacing obsolete facilities has increased the net deficit of beds needed in these categories. On the other hand, in this period the unmet need for general hospital beds was reduced by one-fourth, and for tuberculosis beds by one-half.

6. Although statewide planning for hospital construction is now accepted practice, through the encouragement of the Hill-Burton Act, there are still technical problems of defining more precisely the standards of need. Problems also remain, as to the appropriate amount and distribution of financial assistance to local communities, in order to level out deficits in hospital beds and attain facilities for the promotion of adequate health care throughout the Nation.

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Training Courses in Diabetes Control

The Division of Chronic Disease and Tuberculosis, Public Health Service, announces a series of six courses for training in diabetes control to be held at the Diabetes Study and Training Center, Boston, Mass. Designed for public health administrators, physicians, nurses, health educators, dietitians, nutritionists, medical technologists, and medical social workers, the week-long courses will consist of discussions, demonstrations, and field trips, with opportunities for individual consultation. At present only two of the courses have been scheduled. Announcements of the dates of the others will be made periodically.

The courses are as follows:

A diabetes program in public health (September 21–25, 1953). Designed for all categories of public health workers involved in the planning and operation of diabetes public health programs.

Group teaching of patients (May 25–29, October 5–12, November 30–December 4, 1953). Planned primarily for personnel concerned with organizing and conducting group classes for patients with diabetes and their families.

Nursing aspect of a public health diabetes program (dates to be announced). Planned for nursing personnel in health departments, voluntary agencies, hospitals, clinics and industry.

Nutritional aspects of a public health diabetes program (dates to be announced). Planned for dietitians and nutritionists in public and private health agencies and hospitals.

Laboratory aspects of a public health diabetes program (dates to be announced). Intended for medical technologists in health agencies and hospitals who are concerned with methods of determination and the merits of various blood sugar tests; operation of a mass detection program; and problems associated with the collecting, shipping and storage of blood.

Organization and management of a diabetes clinic (dates to be announced). Planned for personnel concerned with the functioning of a diabetes clinic. The course will be sponsored and given in cooperation with the clinical staff of a large city hospital.

Enrollment in the courses will be limited to 10 persons per course. No registration or tuition fee is required. Further information and application forms may be obtained from the Diabetes Study and Training Center, Public Health Service, 639 Huntington Avenue, Boston 15, Mass. Applications must be received 1 month in advance of date of course.

General Regulatory Powers and Duties Of State and Local Health Authorities

By RUTH M. MOLDENHAUER, M.D., M.P.H., and CLIFFORD H. GREVE, M.S.P.H.

A SURVEY of State laws, regulations, and practices applicable to the establishment and operation of local health departments is being conducted this year by the Division of State Grants of the Public Health Service to obtain information that may be of use to States in organizing and developing local health departments.

The data obtained on the broad regulatory powers and duties of boards of health, health officers, health departments, and legislative bodies, both State and local, are presented in this report.

Recently published data (*1*) dealt with sections of the survey pertaining to the appointment and qualifications of local health officers and the establishment of local health units. A future paper will contain data on the phases dealing with staffing and financing of local health departments.

As indicated in the first report, regional office personnel of the Public Health Service, assisted by the Federal Security Agency's regional attorneys, completed a questionnaire on the basis of a review of the State's statutes and regulations. Through interviews, they obtained information from State health officers, or their representatives, on procedures carried out by practice without statute or regulation. In addition, State health officers were requested to state their opinions of desirable provisions that should be included in statutes.

This report indicates the various provisions of the States for allocating to State and local legislative and administrative officials the responsibility for prescribing and enforcing rules, regulations, orders, ordinances, and other broad regulatory measures relating to public health.

Data submitted indicate that statutes are more inclusive and explicit with respect to general types of powers and duties than they are on organizing local health departments or staffing or financing them.

In the majority of the States regulatory powers and duties are frequently assigned to both State and local health authorities. Specific powers, such as isolation and quarantine, are often governed by regulation in addition to statute.

Dr. Moldenhauer, a commissioned officer of the Public Health Service, is currently assigned to the career development program of the Division of State Grants. Mr. Greve is chief of the analysis and reports section of the division.

Adoption and Enforcement

The question of who has power to pass laws and ordinances, and to issue regulations, rules, and orders regarding public health activities is of major importance, but the questionnaires indicate that such powers are seldom assumed unless law provides for them. The majority of States have statutory provisions granting both State and local boards of health the power to make rules and regulations, and in about half the States both types of boards of health may also issue orders (table 1). In some States, however, these powers are limited in their application to certain local areas or to specific

Table 1. Number of States with statutes empowering State and local authorities to issue rules, regulations, orders, and pass ordinances

Authority	Rules		Regulations		Orders		Ordinances	
	General application	Limited application [1]	General application	Limited application [1]	General application	Limited application [1]	General application	Limited application [1]
State legislature	2	---	2	---	2	---	1	---
State board of health	35	4	37	7	21	3	---	1
State health officer	15	7	13	7	13	8	---	---
Local legislative body	14	7	18	12	4	1	28	14
Local board of health	31	9	32	8	28	3	6	5
Local health officer	7	7	5	8	22	5	2	1
Local health department	2	2	2	2	3	3	---	---

[1] Refers to States having statutes applicable only to some types of governmental areas or to specific matters.

matters. Local health officers in slightly more than half the States have authority to issue orders; local legislative bodies in most States may pass ordinances; and in slightly less than half the States the legislative body may also issue rules; in 30 States local legislative bodies may prescribe regulations. The State legislature rarely has the power to issue rules, regulations, and orders pertaining to public health. Likewise, local health departments very seldom have such authority. One State has a regulation which permits the State board of health to issue rules and orders. One other State permits local health officers to issue orders by practice without any statutory provision.

State and local boards of health and State and local health officers most frequently are charged by law with the enforcement of State laws, regulations, and orders pertaining to public health (table 2). There are a few States in which the enforcement powers of the State board of health and the State health officer extend to local laws, regulations, orders, and ordinances. From half to three-fourths of the

Table 2. Number of States with statutes empowering State and local authorities to enforce laws, regulations, orders, and ordinances

Authority	Laws		Regulations		Orders		Ordinances	
	General application	Limited application [1]	General application	Limited application [1]	General application	Limited application [1]	General application	Limited application [1]
	State							
State board of health	26	2	30	3	20	2	---	---
State health officer	34	3	31	3	24	1	---	---
Local legislative body	5	3	5	3	2	2	---	---
Local board of health	26	7	29	6	22	4	---	---
Local health officer	33	5	34	9	22	2	---	---
	Local							
State board of health	8	---	8	---	8	---	7	---
State health officer	4	---	4	---	5	---	5	---
Local legislative body	7	7	7	7	6	4	11	9
Local board of health	22	4	32	6	23	2	25	7
Local health officer	29	2	32	5	31	1	28	3

[1] Refers to States having statutes applicable only to some types of governmental areas or to specific matters.

States permit local health officers or local boards of health to enforce local laws, regulations, orders or ordinances. Local legislative bodies infrequently have powers of enforcement. In many States the matters pertaining to public health are primarily enforced by local police officials and by public prosecutors with the health authorities' only responsibility being that of making the charge or complaint.

Delegation of Public Health Powers

The majority of States delegate their powers with respect to public health to local areas—at least in some matters (table 3). As many as 32 States delegate powers by statute to local health officers and 27 States make such delegations to local boards of health. Additional States delegate powers by practice without statutory authority. In at least some of the States the delegation of power is limited in that the State board of health or health officer retains supervisory authority. One State law prohibits this delegation of power.

All but two States give the State health authority the power to act in the absence of a local health department, or upon failure of the local health department to take action. In one of the two States without such power, the State assumes this responsibility by practice. In six States, however, this power is restricted to certain areas of responsibility, such as epidemic disease prevention or control.

Specific Powers of Local Authorities

In only a few States do local health officers and boards of health have power of subpena, or power to administer oaths, to issue injunctions, to conduct hearings, or to issue licenses. Most generally, authorization for such action is provided by statutes as indicated in table 4. Local boards of health are given such powers about twice as often as local health officers. Frequently these powers are applicable only to certain local governmental areas and occasionally are applicable only with respect to certain public health matters. There are no regulations pertaining to these specific powers.

Table 5 lists several additional specific powers and indicates the number of States in which the State board of health, local boards of health, local health officers, and local legislative bodies are vested with these powers. The power of isolation and quarantine predominantly rests with State and local boards of health and local health officers. Nearly all States have statutory provisions for isolation and quarantine of communicable disease cases, but in some States such statutes are limited in their application to certain areas or may be invoked only under certain conditions. Local legislative bodies in slightly more than one-quarter of the States possess powers of isolation and quarantine for communicable diseases.

Table 3. Number of States delegating public health powers to local health officers, boards of health, and health departments [1]

Authority delegated power	Power delegated by	
	Statute	Practice
Local health officer	32 (7)	2
Local board of health	27 (4)	3
Local health department	11 (2)	3

[1] Figures in parentheses indicate the number of States included in the tabulation in which provision is applicable only to certain governmental areas or only under certain conditions.

Table 4. Number of States granting by statute or practice specific powers to local health officers or local boards of health

Specific powers	General application		Limited application [1]	
	Statute	Practice	Statute	Practice
Local health officers				
Subpena	2	-------	-------	-------
Administer oaths	3	-------	1	-------
Issue injunctions	3	1	-------	-------
Issue licenses	4	1	2	1
Conduct hearings	5	1	4	-------
Local boards of health				
Subpena	3	1	2	-------
Administer oaths	4	-------	4	-------
Issue injunctions	4	-------	2	-------
Issue licenses	6	3	4	1
Conduct hearings	6	5	6	1

[1] Number of States in which power is limited to some governmental areas or to some public health matters.

In almost all States the State board of health and local health officers have statutory power to make investigations and inspections, and, in at least three-fourths of the States, local boards of health also have such powers. Local legislative bodies in only six States have the statutory power of investigation and inspection with respect to public health matters.

Slightly less than three-fourths of the States have provisions of law permitting State and local boards of health and local health officers to abate public health nuisances. Nearly half the States have statutes granting this power to local legislative bodies, although these statutes are frequently limited to certain types of local areas or to certain types of nuisances.

Nearly three-fourths of the States have statutes which permit the State board of health to forbid gatherings in the interest of public health. More than half the States have laws granting local health officers this power, and nearly half the States grant such power to local boards of health. Local legislative bodies infrequently possess the authority to forbid public gatherings in the interest of public health.

All but two State boards of health have the power to collect vital statistics and disease reports either by statute or by statute and regulation. In Massachusetts the power to collect vital statistics reposes in the office of the secretary of State, and in New York the State health officer has the power to collect vital statistics and disease reports. In addition, local health officers have power to collect vital statistics in 24 States and disease reports in 34 States. Local boards of health have power by statute to collect vital statistics in 12 States and statutory power to collect disease reports in 23 States with regulations supplementing statutory power in 1 State. These two powers are almost never given to local legislative bodies.

The power to initiate court actions and defend health departments against court actions is given to local health officers in 15 States, to the State board of health in 26 States, to local boards of health in 18, and to local legislative bodies in 6. In addition, this power is exercised by practice by the State board of health in 1 State, local boards of health in 1 State, local legislative bodies in 2, and local health officers in 1.

Judicial review of actions of local boards of health or local health officers is authorized by law in 25 States. It is done by practice in 11 others, and is authorized by practice only for cities in 1 State. Judicial review of the action of health officials is specifically prohibited by law under certain circumstances in 2 States and not commonly done in 9 other States wherein the law is silent on the matter. One State failed to supply information on this item.

Table 5. Number of States granting certain specific powers by statute or by statute and regulation to the State board of health, local boards of health, local legislative bodies, and local health officers [1]

Power granted	State board of health		Local board of health		Local legislative body		Local health officer	
	Statute only	Statute and regulation	Statute only	Statute and regulation	Statute only	Statute and regulation	Statute only	Statute and regulation
Isolate and quarantine	39 (6)	4 (1)	37 (2)	3 (1)	13 (4)	3 (1)	40 (7)	3
Investigate and inspect	40 (6)	3	36 (5)	1	[2] 6 (2)	1	40 (3)	3
Abate nuisances	32 (7)	1	34 (3)	1	21 (10)	2 (2)	31 (6)	2
Forbid gatherings	33 (8)	1 (1)	[2] 23 (4)	--------	8 (1)	--------	28 (3)	1
Collect vital statistics	44 (11)	2 (1)	12 (4)	--------	4 (1)	--------	23 (6)	1
Require disease reports	44 (9)	2	22 (2)	1	2	--------	31 (5)	3 (1)
Initiate and defend court action	[2] 26 (2)	--------	[2] 18 (3)	--------	[2] 6 (3)	--------	[2] 15 (3)	--------

[1] Figures in parentheses indicate number of States included in the tabulation in which provision is applicable only to certain governmental areas or only under certain conditions.

[2] In one additional State this power is exercised by practice without statutory provision.

Summary

Data from the survey of State laws, regulations, and practices pertaining to the duties and powers of State and local boards of health, health officers, and health departments indicate that the power to pass public health laws and to issue regulations, rules, and orders generally rests with State and local boards of health and less frequently with State health officers, State or local legislative bodies, or local health officers. Authority to enforce State public health laws and regulations is generally assigned to State and local health officers; the enforcement of local laws and regulations is primarily the legal responsibility of local boards of health and health officers.

States generally delegate their public health powers to local boards of health, health officers, and local health departments. Almost all State health authorities have the power to act in the absence of local health departments, or upon the failure of local authority to take action. Less than three-fourths of the States provide for judicial review of decisions made by boards of health or health officers.

Local health officers and local boards of health infrequently possess the power of subpena, power to administer oaths, to issue injunctions, to conduct hearings, or to issue licenses.

Many State boards of health, as well as local boards of health and health officers, have the power to require isolation and quarantine of communicable diseases; to make investigations and inspections; to abate nuisances; to forbid gatherings in the interest of public health; to collect vital statistics; or to require disease reports. On the other hand, fewer of them have the power to institute court action or to defend their actions in the courts.

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Achievements in World Health

In carrying out its constitutional role as "coordinating and directing authority in international health," the World Health Organization has made notable contributions toward the development of better health everywhere. Outstanding achievements during 1952 were summarized in an information kit, "Health Is Wealth," prepared by the Public Health Service in observance of World Health Day, 1953, as follows:

It gave direct technical aid to more than 100 governments and territories.

It made effective, on October 1, 1952, the new International Sanitary Regulations, designed to facilitate international travel and trade.

It took over, with the United Nations International Children's Emergency Fund, responsibility for continuing the BCG antituberculosis vaccination programs after the official end of the 1951 international campaign.

It maintained an international epidemic-warning service, continued to coordinate worldwide influenza research activities, and operated a tuberculosis research office and several brucellosis centers.

It provided emergency aid for several governments faced with epidemics and refugee health problems.

It recruited, for the United Nations Reconstruction Agency, a team of experts which visited Korea to work out a long-term plan for improving health and medical care, in addition to the technicians working on civilian health programs in South Korea.

An Experiment With Group Conferences For Weight Reduction

By A. L. Chapman, M.D.

Ten overweight women in Alexandria, Va., who participated in group conferences on weight control, lost an average of 17.8 pounds each over a 20-week period. The entire class lost an average of 42.7 percent in excess weight, ranging from 13.5 to 131.5 percent. Weekly conferences were held between March 29 and August 25, 1952, at the Alexandria City Health Department.

Free discussion, centering first on nutritional and psychological orientation and later on self-analysis, was the guiding principle of the conferences. Losing a pound a week until the ideal weight was approximated was selected as each participant's arbitrary goal.

It was repeatedly emphasized that medical supervision of the group members was the sole responsibility of their own physicians. The group leader conducted the conference in such a way that the women would be motivated to decrease their caloric intake. Loyalty in attendance was stressed more than weight loss because it was believed that continued attendance eventually would bring about sufficient motivation to achieve weight reduction. At no time did a spirit of compulsion to lose weight prevail.

Amounts Lost

Four of the 10 women lost weight from the beginning and continued to lose at a rate of more than a pound a week. They were so well motivated that they lost 25, 27, 27, and 25 pounds, respectively, or 131.5, 93.1, 38.8, and 104.1 percent of excess weight. They never seemed unduly upset by the need to restrict their diets.

The other six members found weight reduction more difficult. They needed special attention from the rest of the group, from the consultants, and from the leader. They seemed to resist decisions that might entail dietary restrictions and manufactured excuses when they failed to lose weight as fast as they had hoped. Eventually, one by one they submitted to the interest of the group and belatedly began to acknowledge the inevitability of eating less food if they truly wanted to lose weight.

Four members, told by their own physicians that they had low basal metabolic rates, lost 7, 13, 14, and 25 pounds, respectively, or 36.8, 43.3, 13.5, and 93.1 percent of their excess weight. The woman losing 93.1 percent of her excess weight reported that her dietary intake had to be cut to a low level to achieve this substantial reduction. One woman with heart disease lost 12 pounds. Her percentage of excess weight loss was 24.0.

Methods

Decreased caloric intake was stressed during the first four sessions until a significant degree of weight reduction was achieved. From then on every effort was made to help members include the protective food substances and an adequate amount of protein in their diets.

A weight chart was prepared for each member. A line was drawn on the chart, starting at the current weight of the individual and declining at a rate of one pound a week for 20 weeks. Weights were taken before every meeting and recorded on the charts. In this way, each woman had a graphic record of whether she was losing her weekly pound or going in debt to the group. The charts revealed the members who were having the most difficulty controlling their appetites and who needed encouragement from the more successful members.

Early in the series, each one was asked to name the food item in her diet which she believed to be the worst offender from the standpoint of obesity. Bread, cake, pie, candy, ice cream, soft drinks, and sugar and cream in coffee were mentioned. Each woman pointed to one or two of these foods as significant in

Dr. Chapman, Public Health Service medical director for Region III, formerly was chief of the Division of Chronic Disease in the Bureau of State Services, Public Health Service.

From Michigan comes an informal account of another effort at weight control using the group method. This was self-generated by group members, sparked by a housewife who was stimulated by reading an article in a popular magazine of national circulation. The housewife writes:

"We now have a thriving class of 18 women who have shed 91 pounds as of our fourth meeting. Just as in the reports of other groups, we have our well-motivated, steady losers, some who are running into real difficulty restricting themselves, and one who has steadily gained since joining our class. She is our unmarried member, a teenager 40 pounds too heavy, working in her father's candy store!

"We have enlisted the help of the State department of health, which has offered materials, personnel, and even a meeting place should we need it. Also, the director of the State department of mental health is going to pay us a visit. We plan some tape-recording exchanges to further our understanding of the problem. Pamphlets and films have been used as background material and as diet guides.

"Sources of therapeutic help are limited here. We have no county health doctor, and we hesitate to ask one of our terribly busy private physicians to assume advisership, so each member has depended on her own doctor for advice. I have a short interview with some doctor each week about some of the problems that come up."

causing her own overweight condition. Great stress was placed on discussing the nonfattening substitutes for high caloric foods.

Each woman was then asked to forego indefinitely the one food which she believed to be the chief cause of her own obesity. As a result, the class got off to an encouraging start, which did much to convince the group that overweight is caused by overeating, and that it is controllable. Every member except one with hypothyroidism lost weight by the end of the first week. She lost 3 pounds during the first 2 weeks.

For several weeks, members were encouraged to keep diet records to help them understand the magnitude of their caloric intake. Many women fail to realize the amount of calories accumulated by their habit of eating frequently throughout the day. It soon became obvious that several women were consciously or unconsciously omitting food items from their diet records. As the weeks passed and group confidence increased, the daily records became more accurate.

Education

Educational efforts were limited to imparting simple and basic nutritional concepts. The Metropolitan Life Insurance Co. booklet "Overweight and Underweight" was read aloud by the class. As each paragraph was read, its contents were discussed. Questions brought up were usually answered by members of the group. Three films, "Losing to Win," "Proof of the Pudding," and "Weight Reduction through Diet" were shown at opportune intervals.

Upon the expressed wishes of the members, special consultants were invited to participate in the discussions. On two occasions, a public health physician, trained in nutrition, discussed basic food elements and protective food substances. On another, a psychiatrist attended and developed a discussion on self-analysis, which was continued at two following conferences when a psychiatric social worker was present. Late in the course, a nutritionist explained how to plan menus in terms of food portions rather than in terms of grams. She also discussed individual dietary problems.

When the subject of self-analysis was introduced, several papers on the emotional components of obesity and personality traits of obese people were read and discussed freely. The group showed little or no resentment to the viewpoints expressed in the papers but instead seemed willing, often anxious, to translate the verities contained in them to other members of the group in terms of their own experiences.

Mortality in the United States, 1900–1950

BY TAVIA GORDON

DURING THE LATE eighteenth and nineteenth centuries, death rates for the western world were slowly moving downward. Great pestilential epidemics swept across Europe and North America during this period, but by the beginning of the twentieth century it was evident that the application of discoveries by the pioneer bacteriologists and epidemiologists had brought about a substantial control of these recurrent scourges, and pointed the way to a further reduction in mortality.

Only the most optimistic, however, could have foreseen the reduction that actually occurred during the next 50 years. In 1900, the first year for which the Bureau of the Census received death records from the States, the death rate for the District of Columbia and the 10 States submitting records was 17.2 per 1,000 population. By 1950, the rate was at a record low of 9.6 per 1,000 for the entire United States, a reduction of 44 percent. The increase in medical knowledge, the more general availability of medical care, improvements in environmental sanitation, and the vigorous prosecution of public health programs all contributed to this phenomenal improvement. In addition, the rise in the standard of living and changes in the character of certain diseases played important roles in this decline.

Infectious Diseases

These factors proved most effective in the control of some infectious diseases. The sharp decline in mortality for diarrhea and related diseases, shown in figure 1 as "specified gastrointestinal diseases," probably was mainly due to improved sanitation. The death rate for these causes declined 96 percent between 1900 and 1950, from 154.7 deaths per 100,000 population to 6.2 per 100,000. At the same time, typhoid fever almost completely disappeared as a cause of death. Protection of water and milk supplies and better sewage disposal facilities in cities and many rural areas led to a decline in typhoid fever incidence. The death rate fell from 31.3 in 1900 to 0.1 per 100,000 in 1950.

Mortality for the communicable diseases of childhood fell sharply between 1900 and 1950. This has been attributed to such factors as changes in the character of some of these diseases, more regular medical care for infants and children, widespread immunization programs, and the steady improvement in diet and hygiene. By 1950 death rates for diphtheria, measles, whooping cough, and scarlet fever had declined to a small fraction of their values at the beginning of the century (figs. 2 and 3). In 1900, this group of diseases was responsible for 242.6 deaths per 100,000 children under 15. In 1950, these diseases together caused fewer than 5 deaths for every 100,000 children.

Infant and Maternal Mortality

From the early part of this century, the medical and public health professions made special efforts to reduce the risks surrounding birth and infancy, and the decline in deaths under 1 year of age was truly impressive. Between 1915, when the birth-registration area was established, and 1950, the infant mortality rate declined from 99.9 deaths under 1 year of age per 1,000 live births to 29.2.

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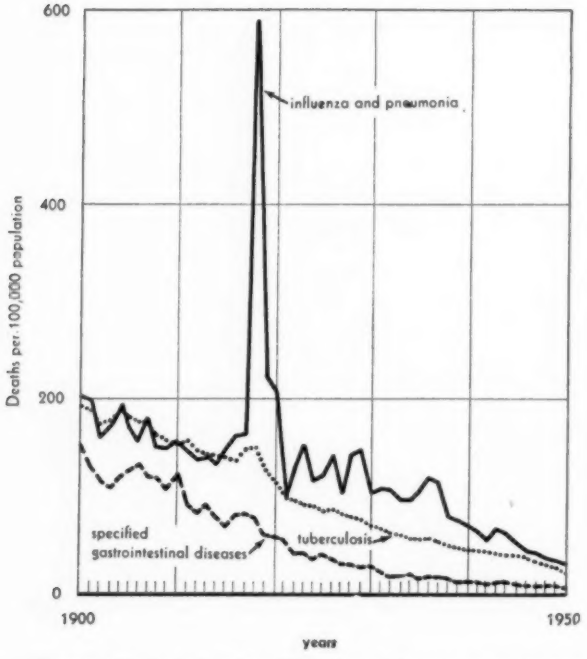
The maternal mortality rate, which did not respond as readily to the efforts to safeguard childbirth, remained high until the 1930's. At that time it began a slow decline, which accelerated rapidly after 1936 as a result of the combined impact of the studies of medical committees on maternal mortality, the discovery of the antibiotics, and improved techniques to control hemorrhage.

Tuberculosis, Influenza and Pneumonia

By 1950, the major causes of death remaining among infectious diseases were tuberculosis and influenza and pneumonia. Mortality declined more slowly for these causes than for the other infectious diseases shown in figures 1, 2, and 3, but the rate of decline accelerated in the late 1940's.

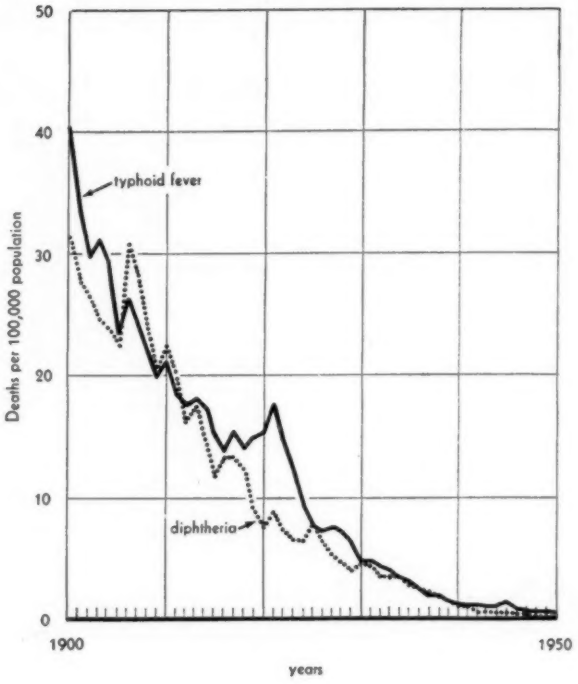
The tuberculosis death rate decreased by as great a percentage between 1945 and 1950 as it had in the preceding 15 years. The death rate of 40 per 100,000 in 1945 was nearly halved by 1950, reaching the low of 22.5 per 100,000 population, and estimates for 1951 and 1952 indicate that this rapid decline is continuing. Part of the recent change may be the result of the cumulative effect of hospitalization and medical care programs. Since tuberculosis appears to have been responsive to improvements in the standard of living over many decades, the general prosperity of the last 10 years may have also contributed to the recent trend.

Figure 1. Death rates for specified gastrointestinal diseases, tuberculosis (all forms) and influenza and pneumonia: death-registration States, 1900–1950.



NOTE: "Specified gastrointestinal diseases" includes dysentery, all forms; gastritis, duodenitis, enteritis, and colitis; and diarrhea of the newborn.

Figure 2. Death rates for diphtheria and typhoid fever: death-registration States, 1900–1950.



With the introduction of sulfonamide and antibiotic therapy, which provided the first effective medical treatment for certain types of pneumonia, the death rate for influenza and pneumonia fell rapidly (fig. 1). Between 1900 and 1937, the death rate for these causes fluctuated widely, but it never fell below 95.7 per 100,000. In 1918, the year of the great influenza pandemic, influenza and pneumonia caused 588 deaths per 100,000 population.

During the 5 years before the introduction of sulfa therapy, 1932–37, the median death rate for influenza and pneumonia was 104.2 per 100,000. The rate dropped in 1938 to 80.4. In subsequent years mortality for these causes continued to decline rapidly. In 1950, the death rate for influenza and pneumonia was

31.3 per 100,000. It remains to be seen, however, how permanent this reduction will be.

The new therapy responsible for these recent changes constitutes a major event in the history of medicine, even though its immediate effect on the total death rate has not been very great. Some of its most dramatic results have been demonstrated for certain diseases of great virulence, like Rocky Mountain spotted fever, psittacosis, plague, and typhus fever, and in a further reduction in death rates for the common infectious diseases. It contributes a powerful reinforcement in the treatment of infectious diseases and in reducing their severity.

Accidents and Chronic Diseases

Not all the changes in mortality since 1900 have been favorable. In 1900, motor vehicle accidents were not even distinguished as a cause of death in the cause lists then current. Since that time motor vehicles and motor vehicle fatalities have become increasingly common. In 1950, the death rate for motor vehicle accidents was 23.1 per 100,000—higher than the death rate for tuberculosis. The mortality for other accidents, however, declined during this period from 72.3 deaths per 100,000 in 1900 to 37.5 in 1950.

Figure 3. Death rates for whooping cough, measles, and scarlet fever: death-registration States, 1900–1950.

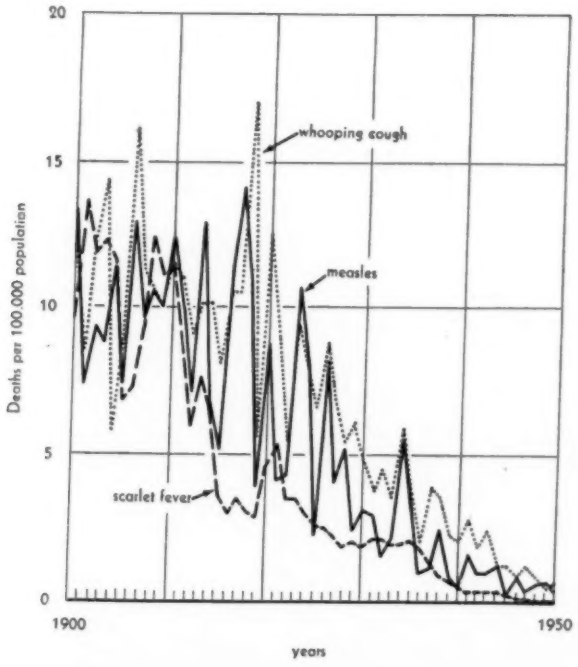
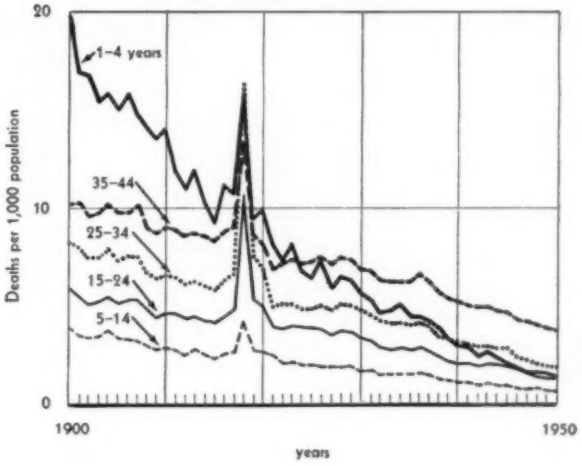


Figure 4. Death rates for the younger ages: death-registration States, 1900–1950.



The chronic diseases as a whole did not show a decreasing mortality in this period, so that as the death rates fell for the infectious diseases the chronic diseases increased in relative importance. In 1900, the cardiovascular-renal diseases and malignant neoplasms accounted for only 24 percent of the recorded deaths. In 1950, 68 percent of all deaths were ascribed to these two groups of causes.

Mortality by Age

Each cause of death has a characteristic age distribution. Consequently, a reduction in mortality for specific causes affects the death rate for the various ages by differing amounts. The infectious diseases were the preponderating causes of death for the younger age groups in 1900. The radical reduction in mortality for these diseases, therefore, had its most marked effect on the death rates at the younger ages and progressively less effect for each older age group. For children aged 1 to 4 years, the death rate dropped from 19.8 per 1,000 in 1900 to 1.4 per 1,000 in 1950, a decrease of 93 percent; the decrease for the age group 35–44 in this period was 65 percent (fig. 4).

Mortality in the older age groups, for which the major causes of death are the chronic diseases, showed decreases of considerably less

magnitude. The death rate for the age group 45 to 54 years decreased 43 percent, from a rate of 15 per 1,000 in 1900 to 8.5 in 1950, and the indicated rate of decrease was smaller for each older age group. For the ages above 85, where the reporting of data is recognized to be unreliable, it is doubtful if any real change in the death rate occurred between 1900 and 1950.

Comparisons With Other Countries

Since the radical decline in mortality during this century has not been confined to the United States, it is instructive to compare our position in 1950 with the position of three other nations with low age-specific mortality rates—England and Wales, the Netherlands, and New Zealand. For the age groups between 1 and 15, the death rates for the United States are about the same as those for other countries. For each succeeding age group the comparison becomes less favorable, and for the age groups from 35 to 65 years the death rate for the United States is higher than that shown for the other countries in the table. In short, the United States has advanced to a position of very favorable mortality for the young ages but not for the older ages.

As the second half of the twentieth century opens, major reductions in mortality rates must come through control of accidents and the chronic diseases. This does not necessarily require another medical revolution similar to that which occurred for the infectious diseases. The experience of other countries demonstrates that a substantially lower mortality for the older ages is possible, even at the present level of medical knowledge.

Death rates by age, for selected countries, 1950

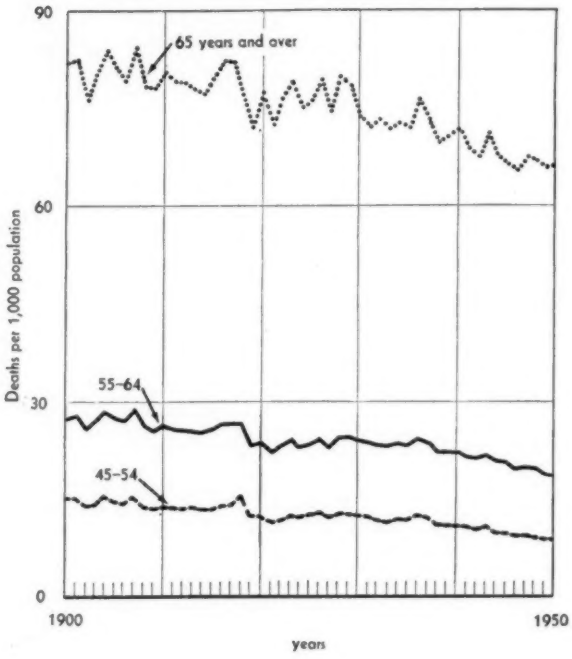
[Exclusive of fetal deaths; rates per 1,000 population in each specified group]

Age in years	United States [1]	Netherlands [2]	England and Wales [3]	New Zealand [4] (exclusive of Maoris)
All ages	9.6	7.5	11.6	9.3
Under 1	33.0	25.3	29.8	23.3
1–4	1.4	1.6	1.4	1.2
5–9	.6	.6	.6	.5
10–14	.6	.4	.5	.5
15–19	1.1	.7	.9	1.0
20–24	1.5	1.0	1.2	1.2
25–29	1.6	1.1	1.5	1.0
30–34	2.0	1.2	1.7	1.5
35–39	2.8	1.6	2.1	2.1
40–44	4.4	2.4	3.1	2.7
45–49	6.8	3.8	5.3	4.9
50–54	10.4	6.2	8.3	7.5
55–59	15.6	9.4	13.2	12.6
60–64	23.3	15.6	21.3	19.3
65–69	33.3	26.7	33.6	31.6
70–74	51.5	45.2	54.3	48.7
75–79	93.3	77.5	89.8	117.2
80–84		129.6	141.8	
85 and over	202.0	226.8	227.6	

[1] Exclusive of deaths among armed forces overseas. Rates based on population enumerated as of April 1, 1950. [2] Data relate to the de jure population. [3] Excluding deaths among armed forces outside country. [4] Excluding armed forces outside country and alien forces within country.

SOURCE: For countries other than the United States, Demographic Yearbook, United Nations, 1952.

Figure 5. Death rates for the older ages: death-registration States, 1900–1950.



Milk Sanitation Honor Roll for 1951–52

Seventy-two communities have been added to the Public Health Service "honor roll" of safe milk communities, and 35 communities on the previous list have been dropped. This revision covers the period from January 1, 1951, to December 31, 1952, and includes a total of 239 cities and 56 counties.

Communities on the "honor roll" have complied substantially with the various items of sanitation contained in the Milk Ordinance and Code Recommended by the United States Public Health Service. The State milk sanitation authorities concerned report this compliance to the Public Health Service. The rating of 90 percent or more, which is necessary for inclusion on the list, is computed from the weighted average of the percentages of compliance. Separate lists are compiled for communities in which all market milk sold is pasteurized, and for those in which both raw milk and pasteurized milk is sold.

The recommended milk ordinance, which forms the basis for the milk sanitation ratings, is now in effect through voluntary adoption in 397 counties and 1,548 municipalities. The ordinance has been adopted as regulation by 34 States and 2 Territories. In 11 States and the 2 Territories it is in effect state-wide.

This compilation is from the Division of Sanitation of the Bureau of State Services, Public Health Service. The previous listing, with a summary of rules under which a community is included, was published in Public Health Reports, September 1952, pp. 914–916. The rating method was described in Public Health Reports 53: 1386 (1938) Reprint No. 1970.

The ratings do not represent a complete measure of safety, but they do indicate how closely a community's milk supply conforms with the standards for grade A milk as stated in the recommended ordinance. High-grade pasteurized milk is safer than high-grade raw milk because of the added protection of pasteurization. The second list, therefore, shows the percentage of pasteurized milk sold in a community which also permits the sale of raw milk.

Although semiannual publication of the list is intended to encourage communities operating under the recommended ordinance to attain and maintain a high level of enforcement of its provisions, no comparison is intended with communities operating under other milk ordinances. Some communities might be deserving of inclusion, but they cannot be listed because no arrangements have been made for determination of their ratings by the State milk sanitation authority concerned. In other cases, the ratings which were submitted have lapsed because they were over 2 years old. Still other communities, some of which may have high-grade milk supplies, have indicated no desire for rating or inclusion on this list.

Communities Awarded Milk Sanitation Ratings of 90 Percent or More, 1951–52

100 PERCENT OF MARKET MILK PASTEURIZED

Community	Date of rating
Alabama	
Auburn	9–19–1951
Birmingham - Jefferson County	7–26–1952
Gadsden-Etowah County	8– 8–1952
Montgomery	5–22–1952
Opelika	6–19–1952
Arkansas	
Fort Smith	10–19–1952
Colorado	
Colorado Springs	6– 6–1951
Denver City and County	11–27–1951
Colorado—Continued	
Grand Junction	4–25–1952
Pueblo	8–1951
Weld County	4–11–1952
Georgia	
Albany	5–15–1952
Athens	4–10–1952
Atlanta	11–21–1951
Cairo	5–31–1951
Calhoun	2–15–1951
Columbus	3–30–1951
La Grange	6–25–1951
Quitman	5–30–1951
Valdosta	5–13–1952
Waycross	10–23–1951
Georgia—Continued	
West Point	6–22–1951
Illinois	
Chicago	8– 1–1951
Indiana	
Bedford-Orleans	10–1951
Bloomington	11–26–1952
Bluffton	1–1952
Cooperative Grade A Milk Program: Holland Huntingburg Jasper	9–1952
Elkhart	11–1952

Communities Awarded Milk Sanitation Ratings of 90 Percent or More, 1951–52—Continued

100 PERCENT OF MARKET MILK PASTEURIZED—Continued

Community	Date of rating
Indiana—Continued	
Evansville	10–1951
Fort Wayne	11–1951
Indianapolis	10–31–1952
Madison	7–1952
Marion and Gas City	4–1951
Peru	8–27–1952
Rushville	8–1951
Shelbyville	8–1952
South Bend	8–14–1951
Valparaiso	8–1952
Vincennes	5–1951
Iowa	
Des Moines	7–1951
Dubuque	11–14–1952
Mason City	10– 3–1952
Kansas	
Dodge City	4–11–1951
Erie	5– 1–1951
Hillsboro	11– 7–1952
Kentucky	
Bowling Green	4–17–1952
Calloway County	2–15–1952
Campbell County-Newport	11–28–1951
Christian County	12–20–1951
Graves County	2– 7–1952
Louisville and Jefferson County	5–23–1952
McCracken County	2–13–1952
Owensboro	8– 6–1952
Paris	5–17–1951
Warren County	4–17–1952
Louisiana	
New Orleans	12– 6–1951
Vermilion Parish	9– 9–1951
Mississippi	
Aberdeen	10–26–1951
Amory	10–25–1951
Belmont	7–12–1951
Booneville	9–28–1951
Brookhaven	3–11–1952
Canton	10– 1–1952
Clarksdale	9–25–1952
Cleveland	9– 3–1952
Columbia	7–17–1952
Columbus	8–13–1951
Mississippi—Continued	
Corinth	6– 6–1951
Eupora	3–28–1952
Greenville	8–25–1952
Greenwood	4–15–1952
Grenada	1–22–1952
Houston	5–31–1951
Iuka	7–12–1951
Kosciusko	1–31–1952
Louisville	10– 4–1951
Macon	6–12–1952
McComb	10–25–1951
Meridian	6–18–1952
Morton	6–17–1952
New Albany	1– 7–1952
Okolona	5–29–1951
Ruleville	4–13–1952
Starkville	11–27–1951
State College	11–27–1951
Tupelo	4–20–1951
Vicksburg	6–13–1952
Winona	1–24–1952
Missouri	
St. Joseph	6–14–1951
Springfield	2–20–1952
Nebraska	
Grand Island	9–18–1952
Nevada	
Yerington	12–5–1951
North Carolina	
Alleghany County	9–10–1952
Burke County	6–28–1951
Charlotte	1–11–1952
Cumberland County	2–15–1952
Davie County	10– 1–1952
Durham County	7–18–1952
Edgecombe County (excluding Rocky Mount)	7–16–1952
Forsyth County	7–16–1952
Guilford County	8– 6–1952
Henderson County	2– 5–1952
High Point	2–16–1951
Jackson County	1–17–1952
Lincoln County	3–19–1952
Mars Hill	1– 4–1952
Mitchell County	8–10–1951
North Carolina—Continued	
New Hanover County	6–10–1952
Orange County	7– 3–1952
Randolph County	3– 9–1951
Richmond County	5–29–1951
Scotland County	5–31–1951
Swain County	1–17–1952
Transylvania County	2– 5–1952
Yadkin County	10– 1–1952
Yancey County	8–10–1951
South Dakota	
Sioux Falls	10–25–1952
Vermillion	6–12–1952
Tennessee	
Athens	7–16–1952
Bristol	10–19–1951
Chattanooga	11–13–1952
Cleveland	10– 1–1952
Clinton	11–28–1951
Columbia	5–22–1952
Cookeville	11–14–1951
Cowan	10–17–1952
Dandridge	9–17–1951
Decherd	10–17–1952
Erwin	10–15–1951
Fayetteville	6–27–1951
Franklin	6– 6–1952
Gallatin	5–11–1951
Greenville	4–17–1952
Jefferson City	9–25–1951
Johnson City	8–27–1952
Kingsport	10–23–1951
Knoxville	8–22–1951
Lebanon	8– 1–1952
Lewisburg	6–12–1952
Loudon	4– 3–1952
Manchester	10–17–1952
Memphis	6– 5–1951
Morristown	9–25–1951
Nashville and Davidson County	11– 5–1951
Newport	9–18–1951
Paris	4–18–1951
Pulaski	5–24–1951
Rogersville	4–21–1952
Shelbyville	6–11–1952
Springfield	5– 8–1951
Sweetwater	9–16–1952
Tullahoma	10–17–1952
Winchester	10–17–1952

Communities Awarded Milk Sanitation Ratings of 90 Percent or More, 1951–52—Continued

100 PERCENT OF MARKET MILK PASTEURIZED—Continued

Community	Date of rating
Texas	
Commerce	9– 2–1952
Corsicana	8– 6–1952
Dallas	4–26–1951
El Paso	10–21–1952
Falfurrias	1–12–1951
Galveston	12–11–1951
Gladewater	7–26–1952
Harlingen	8– 4–1951
Houston	6–11–1952
Kerrville	7–31–1952
Kilgore	7–26–1952
La Feria	8– 2–1951
Lamesa	5–10–1951
Levelland	5– 9–1951
Lufkin	10– 8–1951
Mercedes	8–21–1951
Mission	8–24–1951
Mt. Pleasant	9–24–1952
Orange	1– 6–1952
Pharr	8–22–1951
Port Arthur	10–17–1951
San Antonio	11–20–1951
San Benito	8– 1–1951
San Juan	8–23–1951
Texarkana	7– 2–1952
Texas City	1–16–1951
Tyler	10– 9–1951
Victoria	7–24–1952
Waxahachie	9–30–1952
Weslaco	8–24–1951
Wichita Falls	4–10–1952
Utah	
Logan	5–14–1952
Minersville	1–25–1951
Ogden	12–11–1951
Salt Lake City	4–29–1952
Virginia	
Abingdon	10–19–1951
Blacksburg	8– 7–1952
Bristol	10–19–1951
Buena Vista	5– 8–1951
Front Royal	8–29–1951
Lexington	5– 8–1951
Luray	8–29–1951
Narrows	8– 8–1952
Norfolk	9– 5–1952
Pearisburg	8– 8–1952
Pulaski	8– 7–1952
Radford	8– 7–1952
Richmond	5–21–1952
Roanoke	9–19–1952
Staunton	11– 7–1952
Suffolk	9–26–1952
Waynesboro	8– 3–1951
Washington	
Cowlitz County	10–12–1951
Everett	6–14–1951
Spokane	9–25–1952
Whitman County	6–19–1952
Wisconsin	
Madison	10– 5–1951

BOTH RAW AND PASTEURIZED MARKET MILK

Community and percent of milk pasteurized	Date of rating
Alabama	
Clanton, 87.2	5–12–1952
Huntsville, 98	8–10–1951
Lanett, 97.8	11– 6–1952
Georgia	
Brunswick-Glynn County, 96	11– 6–1952
Camilla, 78	5–30–1951
Carrollton, 94.2	3–14–1952
Cartersville, 97	12–11–1952
Cedartown, 98.3	3–11–1952
Dalton-Whitfield County, 83.3	4– 4–1951
Gainesville-Hall County, 93.1	3–21–1952
Macon, 98.6	6–15–1951
Newnan, 94.7	6– 5–1952
Thomaston, 81.7	4–30–1952
Thomasville, 99.4	5–29–1951
Indiana	
Michigan City, 98.1	7–1951
Kansas	
Neodesha, 85	3–14–1951
Pittsburg, 98	1–17–1952
Kentucky	
Lexington and Fayette County, 97	4–28–1952
Louisiana	
Iberia Parish, 96	5– 3–1951
Mississippi	
Gulfport, 98	4–30–1952
Hattiesburg, 96	7–31–1952
Jackson, 98.6	9–11–1952
Laurel, 93.6	8–13–1952
West Point, 97.6	7–18–1951
Montana	
Missoula, 99.4	9–1952
North Carolina	
Ashe County, 78.7	9– 9–1952
Buncombe County, 95.8	6–15–1951
North Carolina—Continued	
Cabarrus County, 80.3	1–15–1952
Caldwell County, 88.7	10–29–1951
Halifax County, 83.4	4–10–1952
Kings Mountain, 83.8	8–18–1952
Macon County, 91.5	11– 7–1952
Montgomery County, 93.1	3–22–1951
Polk County, 87.5	6–18–1952
Robeson County, 96.6	2–15–1952
Shelby, 74.4	6– 6–1952
Wilkes County, 90.6	9–20–1951
Oregon	
Salem, 99.7	7–15–1952
South Carolina	
Spartanburg and Spartanburg County, 91.3	10–31–1951
Tennessee	
Alcoa, 99.5	9–17–1952
Harriman, 90.6	7–26–1951
Maryville, 99.5	9–17–1952

Communities Awarded Milk Sanitation Ratings of 90 Percent or More, 1951–52—Continued

BOTH RAW AND PASTEURIZED MARKET MILK—Continued

Community and percent of milk pasteurized	Date of rating
Tennessee—Continued	
McMinnville, 95.3	5– 7–1952
Murfreesboro, 98.7	7– 6–1951
Texas	
Amarillo, 95	7–23–1951
Austin, 97.3	10–24–1951
Brenham, 94.9	7–26–1951
Brownsville, 92.7	8– 1–1951
Cleburne, 95.5	7–31–1952
Edinburg, 93.8	8–28–1951
Fort Worth, 99.97	2–12–1952
Gilmer, 94.4	1–29–1952
Greenville, 98	9–27–1952
Henderson, 94	1–31–1952
Laredo, 80	9–18–1952
Longview, 99.4	7–26–1952
Lubbock, 99	8–25–1952
Marshall, 87.2	10– 3–1952
McAllen, 99	8–22–1951
Palestine, 88.8	1–15–1952
Paris, 92.3	9–26–1951
Sherman, 93.3	11– 6–1951
Virginia	
Harrisonburg, 96	11–12–1952
Lynchburg, 98.2	6–22–1951
Washington	
Seattle-King County, 99.9	6–1951
Tacoma, 99.7	8–13–1952
West Virginia	
Clay County, 88	9–16–1952
Kanawha County, 96	6– 6–1952
Nicholas County, 55	9–18–1952

NOTE: In these communities the pasteurized market milk shows a 90-percent or more compliance with the grade A pasteurized milk requirements, and the raw market milk shows a 90-percent or more compliance with the grade A raw milk requirements of the Milk Ordinance and Code Recommended by the United States Public Health Service. Note particularly the percentage of milk pasteurized in the various communities listed. This percentage is an important factor to consider in estimating the safety of a city's milk supply. All milk should be pasteurized, either commercially or at home, before it is consumed.

Immunization Information for International Travel

A summary of the changes made in immunization requirements from May 31, 1951 through January 1953, is given in a supplement to the booklet Immunization Information for International Travel, issued in May 1951.

Additional copies of the supplement may be obtained from the Division of Foreign Quarantine. The booklet and the supplement are available to Public Health Service personnel through regular supply channels. They may be purchased from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., at 15 cents for the two. On orders of 100 or more of the supplement and booklet, delivered at the same address, a discount of 25 percent is allowed.

State and local health departments and facilities of the Public Health Service are informed of official changes in immunization requirements through "Quarantine Measures" in the weekly Communicable Disease Summary.

A Facility for Use Of Radioactive Isotopes In a General Hospital

GENERAL HOSPITALS more and more are becoming a point of use of radioactive isotopes for certain clinical tests and for treatment of selected patients. The unique characteristics of radioactive substances as employed in medical practice make necessary the planning and development of a special area to accommodate their use in the general hospital.

Based on established knowledge of the hazards associated with the use of radioactive isotopes, and on current experience in operating units, the Public Health Service, in cooperation with the Atomic Energy Commission and other authorities, has developed guide material for use in designing a radioactive isotope area in a general hospital.

Plan of the Area

The minimum, basic, adequate facility for use of radioactive isotopes in the hospital consists of two rooms: a radiochemistry laboratory and a patient uptake-measuring room (see plan on page 450).

In the radiochemistry laboratory, the shipments of radioactive isotopes are received and stored and the proper dilutions for patient dosage are prepared. Here also, clinical specimens are prepared for examination, the doses of isotopes are given to patients, and glassware, linens, clinical specimens, and other items contaminated with radioactive isotopes are cleaned, held for decay of radioactivity, or stored prior to disposition.

The plan incorporates such elementary design features as: equipment located on the side walls, permitting window space with heating outlets below; separate work tops for patient dose and clinical specimen preparation; high level radiation area and isotope storage (see "hoods 7" and "13" on drawing) on an outside wall, far removed from radiation measurement area; separation from patient uptake-measuring room by a corridor to minimize disturbance of radiation measurements caused by storage of stock solutions of radioactive isotopes.

In the patient uptake-measuring room, the radioactive content of clinical specimens is determined and the patient uptake of radioactive substance is measured. The room is divided into three areas: waiting, clerical, and clinical.

This basic, 2-room facility should provide for a patient load of about 60 patients a month. On the assumption that not more than 2 or 3 patients are receiving radioactive gold-198, it is equipped for a maximum of 10 patients in a working day.

As the use of radioactive isotopes will probably increase, the hospital should plan for economical expansion of the isotope area. By adding a second patient uptake-measuring room, the hospital can double the patient capacity of this basic facility.

Design and Operation

Design and construction of the radioactive isotope area must provide for necessary radiation shielding to maintain personnel exposures below 0.3 roentgen a week, for preparation of patient doses of isotopes, for ease of cleanup whenever radioactive material is accidentally spilled, and for measurement of the patient's absorption of isotopes.

In operating radioactive isotope facilities, continued vigilance is necessary to protect personnel against excessive radiation exposures and to assure that work areas are free from contamination. Personnel exposures should be monitored by use of film badges or pocket radiation dosimeters to be worn at all times the individual is in the area. Work areas should be

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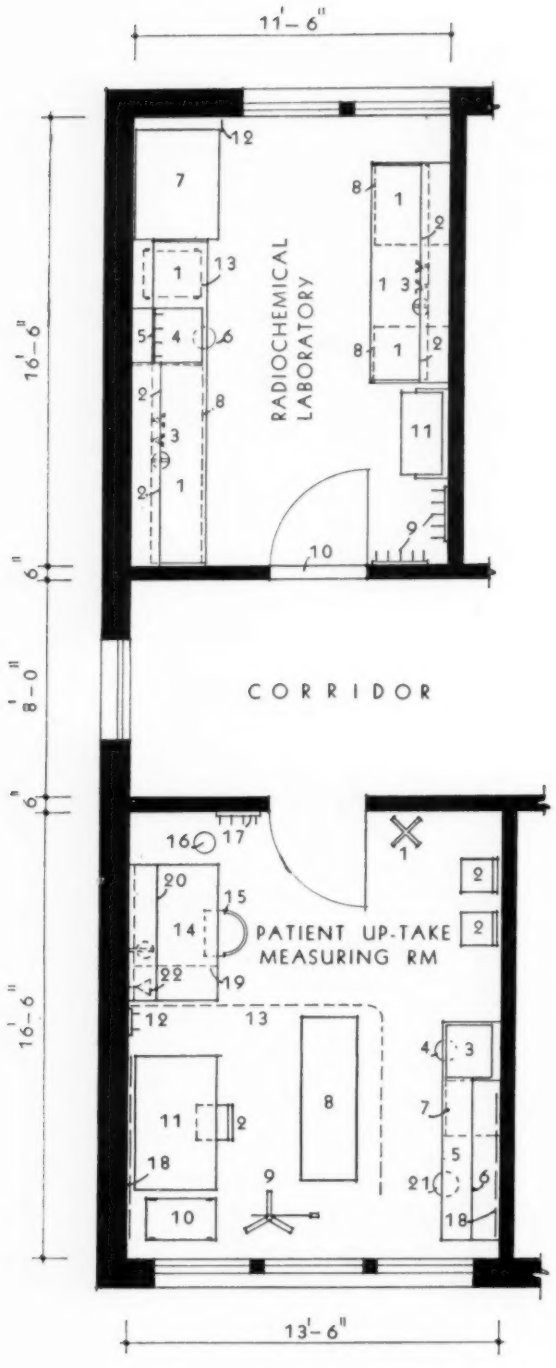
The guide material was developed by W. R. Taylor, hospital architect, Division of Hospital Facilities, and Samuel C. Ingraham, M. D., Division of Engineering Resources, Public Health Service. Technical details are given in the December 1952 issues of Hospitals (p. 74) and Architectural Record (p. 181).



Radiochemical Laboratory

1. Work top with splash back.
2. Wall cabinets.
3. Air, gas, and electric outlets.
4. Sink, foot, knee, or elbow controls for hot and cold water, plus one cold-water hand-controlled outlet.
5. Peg board.
6. Contaminated waste receptacle under sink.
7. Fume hood.
8. Cabinets below.
9. Hook strip.
10. Bright yellow flush threshold to indicate radiation hazard zone.
11. Paper-roll holder 48 inches above floor.
12. Metal closure plate.
13. Isotope storage below work top, on dolly.

Patient Uptake-Measuring Room

1. Costumer.
2. Straight chair.
3. Sink, foot, knee, or elbow controls.
4. Contaminated waste receptacle.
5. Work top.
6. Wall cabinets.
7. Cabinet below work top 24 inches wide.
8. Examination table.
9. Tube stand on casters.
10. Dolly.
11. Table.
12. Hook strip for patients' clothes.
13. Curtain rod and curtain.
14. Stenographer's desk.
15. Stenographer's chair.
16. Waste paper receptacle.
17. Hook strip for staff.
18. Constant voltage plug-in strip.
19. Record file.
20. Book shelf above desk.
21. Stool.
22. Telephone outlet.

monitored regularly by use of radiation survey instruments suitable for detecting possible contamination of furniture, walls, and floors.

Hospitals planning the use of radioactive isotopes for the first time should consult the Isotopes Division of the Atomic Energy Commission, Oak Ridge, Tenn., to learn the requirements and regulations governing qualification for use of radioactive isotopes for human applications.

PHS publications

Organized Health Services in A County of the United States

Several years ago a cooperative project was undertaken by the Monongalia County Health Department in West Virginia and the Public Health Service to survey the structure and function of all organized health services having an impact on the people of one rural county. It was the first such study made. The report was mimeographed and had limited distribution, but demand for it was great so it was printed in this present form.

The report covers in detail all agencies in the county which provide health services, types of service and administrative structure of each, source of support of their operations, and extent of service. The scope of activity includes preventive disease services, medical care, and research and training. The summary and discussion considers the historical backgrounds, local-State-national relationships, and the role of the health department.

At the end of January 1949, there were in Monongalia County 155 different agencies with organized health services. These agencies fall into the general categories: official and voluntary health agencies, other official agencies with health functions, voluntary social agencies with health functions, health service enterprises, health functions of industry and labor, professional and auxiliary organizations, and civil and social groups with health functions. The largest number of these agencies was supported by tax funds and the next largest group by individual members.

An analysis of the quantitative data in the report indicates that far greater sums were spent on medical care than on prevention of disease. Individual categorical programs, such as services for veterans, workmen's compensation cases, or sanatorium care for tuberculosis, involved greater expenditures than the entire appropriation for the county health department from all local sources.

Official health agencies were responsible for the greatest volume of services and expenditures relating to prevention of disease, and other official health agencies with health functions had a large share in school health services, safety, food and drug control, nutrition, and industrial and adult health. Voluntary agencies played a major role in tuberculosis and chronic disease control, and in health education. Of the medical care programs, the largest in the county were those for company employees covered by prepayment plans, especially miners and their dependents, and those for veterans. Organized efforts for hospitalization have been greatest for special classes of service under the medical care programs. The greatest financial weight of the special illnesses has been for tuberculosis.

Services of the programs for preventive disease and medical care under government agencies tended to exceed those provided by the voluntary agencies, particularly those for crippled children. On the other hand, in many spheres of health and community activity in which government has not participated, those of the voluntary agencies and economic enterprises were of the greatest significance.

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Roemer, Milton I., and Wilson, Ethel A.: Organized Health Services in a County of the United States. (Public Health Service Publication No. 197) 1952. 91 pages. 45 cents.

Tuberculosis Beds in Hospitals and Sanatoria January 1, 1952

There are in the United States and Territories 1,122 institutions which provide 111,505 beds for the care of tuberculosis, according to the seventh annual edition of the *Index of Hospitals and Sanatoria with Tuberculosis Beds in the United States and Territories*. Of these, 1,006 hospitals are local (State, city, county, and district), and 116 are operated by the Federal Government. In the continental United States alone there are 1,097 institutions, 982 of which are locally operated and 115, federally operated.

Comparison with the 1951 index reveals that 373 institutions previously unreported appear in the latest edition of this report. Only 7 of these are new facilities. Also, 26 institutions which were reported in the earlier index are deleted from the present edition and reasons for these deletions given.

The information in the 1952 index was gathered by means of a postcard questionnaire sent to all the locally operated hospitals. Data are analyzed as to type of hospital and ownership and control, and are compared with data in the 1951 report. The hospitals are indexed by State, with the number of beds given for each institution.

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Tuberculosis Beds in Hospitals and Sanatoria, January 1, 1952. (Public Health Service Publication No. 253) 1952. 32 pages; tables. Available upon request to Division of Chronic Disease and Tuberculosis, Public Health Service, Washington 25, D. C.

The Head Nurse Looks at Her Job

The continuing shortage of nurses is one of the most acute problems in medical care today. Even the most successful recruitment programs cannot supply graduate nurses fast enough to keep pace with the demands for their services. These factors indicate a need for hospitals to evaluate the utilization of professional nursing personnel and to determine whether or not administrative changes might save personnel time and hospital dollars.

This manual, developed by the Division of Nursing Resources of the Public Health Service, offers a method by which hospitals of all sizes may determine how head nurse time is distributed between patient care management duties and duties which could be performed by less skilled nursing personnel. It was developed for use in units providing

bedside care to patients in general and allied special hospitals.

The method described consists of observations of head nurse activities in one or more units for a period of two or more full days during which detailed time records are kept. An observer "shadows" the head nurse and assistant head nurse at all times while they are on duty and records the time, the area of activity and the level of skill required for each task performed. The recorded data are coded according to area and level and later tabulated and analyzed for use in determining what corrective action may be needed and how to initiate it.

The manual outlines the procedures for such a study and is in looseleaf format to facilitate its use during the training period before a study as well as during the study itself. Detailed instructions are given for observers, including the classification of activity areas and levels. Suggestions are given for constructing the record forms and the manner in which data are to be recorded and analyzed. The appendix also includes two training narratives to assist in the teaching of observers.

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Gillan, Ruth I., Tibbitts, Helen G., and Sutherland, Dorothy. The Head Nurse Looks at Her Job. A Manual for Studying Head Nurse Activities in Hospitals. (Public Health Service Publication No. 227) 1952. 77 pages; illustrated. 40 cents.

for the general public

Arthritis and Rheumatism

Arthritis is man's oldest known chronic affliction and is the world's leading crippler. About 7½ million Americans suffer from arthritis and rheumatism, and 1 million of those are permanently disabled. The prevalent forms of these diseases—rheumatoid arthritis, osteoarthritis, rheumatic fever, gout, and fibrositis—are discussed in this health information leaflet. The information given includes suspected causes, symptoms, effect on various parts of the body, and treatment.

Readers are warned against self-treatment. They are urged to seek a physician's advice if suffering pain, stiffness, or swelling in the joints, for early treatment by a physician benefits the majority of rheumatic patients and often prevents disability.

Attention is called to the work of three organizations on arthritis and rheumatism. The American Rheumatism Association, the Arthritis and Rheumatism Foundation, and the National Institute of Arthritis and Metabolic Diseases of the Public Health Service are working cooperatively to increase the understanding and improve the treatment of arthritis and rheumatism.

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Arthritis and Rheumatism. Health Information Series, No. 9 (Public Health Service Publication No. 29) revised 1952. 2-fold leaflet. 5 cents; $2 per 100 copies.

Importance of Nutrition To Good Healh

This leaflet was prepared in response to frequent requests for nutrition information which could not be satisfactorily referred to other Federal agencies. The introduction stresses the importance of good nutrition for good health and the need for proper diet to prevent fatigue at work and play and to avoid lowered resistance to infection. A physician's advice is suggested if a special diet is needed.

The leaflet describes the important food elements, and how they are used in the body. Foods containing the various elements are listed in the margins of the pages. The vitamins are discussed in the same manner, with a description of each, what it does for the body, and the foods in which it is found. A brief section on calories is included. Reference is made to a chart showing food values and calories, obtainable from the U. S. Department of Agriculture, and to other source material.

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Importance of Nutrition to Good Health. Health Information Series No. 31 (Public Health Service Publication No. 162) 1952. 12 pages; illustrated. 5 cents. $3.75 per 100.

Diabetes

About 2 persons out of every 100 have diabetes mellitus, according to recent surveys, and about half of them do not know they have it. The disease can develop in persons from all age groups, but those over 40, those with diabetes in their families, and those who are overweight are most likely to have it.

These facts are brought out in this health information leaflet which discusses diabetes, its cause, and the manner in which it is controlled. The functions of the pancreas, the results of its malfunctioning, and the symptoms of diabetes are described. The information given also includes the tests by which the disease can be detected and the methods of controlling it through the use of bottled insulin, dietary restrictions, and proper exercise. It is pointed out that because of the increasing numbers of persons over 45, diabetes is more common than formerly. However, since it can be discovered and treated successfully, no one need be handicapped by diabetes.

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Diabetes. Health Information Series No. 70 (Public Health Service Publication No. 137) November 1952. 2-fold leaflet. 5 cents; $4.00 per 100.

Publications for which prices are quoted are for sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Orders should be accompanied by cash, check, or money order and should fully identify the publication (including its Public Health Service publication number). Single copies of most Public Health Service publications can be obtained without charge from the Public Inquiries Branch, Public Health Service, Washington 25, D. C.

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